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A

SYSTEM

OF

SURGERY:

BY

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ILLUSTRATED WITH COPPERPLATES.

VOLUME I.

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PREFACE

TO THE

SIXTH EDITION.

I HAVE reaſon to hope, that this, the ſixth edition of my Syſtem of Surgery, will be found conſiderably improved: I have been at pains to inſert in it all ſuch real improvements as have been made in Surgery ſince the firſt editions of this work were publiſhed; and to give repreſentations of ſuch uſeful inſtruments as have been invented during that period.

It is alſo my intention, ſtill to keep theſe objects in view, and to incorporate in ſuch future editions as may be called for, all ſuch improvements as may come to my knowledge.

I muſt beg leave, however, to obſerve, that I do not engage to notice all that may be mentioned to me as improvements, or

that authors may judge proper to publiſh: For not having done ſo, I have already indeed been pointedly blamed: But authors ſhould recollect, that with whatever partiality they may view their own productions, and thoſe improvements which they themſelves or their friends may bring forth, that others may not value them ſo highly.

Anxious to avoid controverſial writing, in which, a full occupation of my time, in what I judge to be more uſeful purſuits, does not permit me to engage, and to which my inclination is altogether adverſe, nothing ſhall tempt me to give way to it. This remark I am induced to ſuggeſt, from being informed, that ſome have written in ſuch a manner on different parts of my publications, as if they wiſhed and expected that I ſhould reply to them: Books of this deſcription, however, for the reaſons I have given, I ſhall never read; but I ſhall be pleaſed to learn, that the labours of thoſe who have written them are not entirely loſt, and that they derive the ſatisfaction of

of proving uſeful, by pointing out to others ſuch errors as I may have fallen into. Not doubting, that every work muſt riſe or fall according to its merit, I ſhall continue, as I have hitherto done, without regard to the opinions of individuals, to detail, what, from experience and obſervation, I judge to be the beſt practice, and to ſtate my opinions clearly and decidedly; but, without endeavouring to force theſe opinions upon others, I ſhall leave it to the Public to determine, whether theſe, or thoſe of other men, ſubmitted to their conſideration, ought to be followed.

In ſpeaking of the late improvements in Surgery, I have elſewhere obſerved, what may here with propriety be repeated, that were I to endeavour to trace all that have been propoſed within theſe laſt fifty or ſixty years, I ſhould often find it difficult, and in ſome inſtances impoſſible to determine, by whom the practice as now eſtabliſhed was introduced; and in order to give a fair account of the progreſs of the different operations of Surgery, from their rude to their improved

 ſtate,

ſtate, I ſhould be under the neceſſity of entering upon a full chronological hiſtory of each: While this kind of inquiry could ſerve no uſeful purpoſe, it would tend to render more prolix, a work which, from the variety of its objects, muſt neceſſarily extend to a great length: I ſhall, therefore, in general, decline it: When the author, however, of any remarkable improvement is with certainty known, I ſhall never fail to give him all the credit which his diſcovery ſeems to merit: but to notice every inconſiderable alteration that may be propoſed upon operations, and to enumerate the opinions contained in many publications, often the effuſions of men of no practice or obſervation, as it could tend to no utility, it will not therefore be attempted.

I have alſo formerly remarked, that I wiſh every where to avoid theoretical diſquiſitions: When the ſubject under conſideration can be rendered more clear and intelligible, I have occaſionally employed ſuch reaſoning as experience and com-

mon ſenſe ſeem evidently to ſupport; but I have ſtudiouſly guarded againſt the diſcuſſion of doubtful ſpeculative opinions: In addition to this I may obſerve, in the words of a celebrated German practitioner, that I have carefully avoided general maxims: In no ſcience, he obſerves, does ſelf-ſufficiency, or bold and general aſſertions, and decided axioms, more certainly mark ignorance and want of experience than in the Science of Medicine *. Inſomuch, that in whatever publication they abound, there is much cauſe to ſuſpect, that the author has not enjoyed thoſe full opportunities of obſerving the progreſs of diſeaſes, and the numberleſs varieties that they aſſume, which every man ought to have done before he attempts to give information to others.

To this publication it has been objected, that it is too minute, and of courſe too extenſive. But it muſt be recollected, that it is chiefly written for thoſe who are learning, or who are yet young in the

* Aug. Gottlieb Ritcher, M. D.

the profession of Surgery, and not so much for men of experience, who alone have stated this objection, and who in this instance seem to have forgot the steps by which they themselves gained the knowledge which they possess, or that they ever required assistance in the more early part of their chirurgical pursuits. It was a want of this kind of assistance, when I entered on the study and practice of Surgery, and which at that time was generally felt and complained of, that first suggested to me the propriety of publishing this work; and if it shall continue to afford to the younger part of the profession, what I have reason to hope it has hitherto done, an easier method than they formerly possessed, of acquiring knowledge in the practical part of Surgery, and of the principles on which it is founded, I shall not be disposed, from the remarks of a few, to alter the manner in which it is written. At some future period, I, or my son, now engaged in the same profession, may give an abridgement of the whole, which may serve as a manual or directory,

for

for thoſe occupied in the line of chirurgical operations ; but the conciſe deſcription of an abridged work, would be ill calculated for thoſe who have ſeen nothing, and who have therefore all to learn.

In this edition, a conſiderable change will be perceived in the arrangement of the ſubjects ; and the volume on Inflammation and Ulcers, formerly publiſhed ſeparately, now makes part of the preſent work. At the end of every volume are inſerted the Plates which more particularly belong to it ; and a liſt of the whole Plates is given immediately after the Contents of each, by which any particular Plate may be readily found. A General Index is alſo ſubjoined to the laſt volume.

To prevent inconvenience or unneceſſary expence to the purchaſers of former editions, I propoſe, ſo ſoon as I can get it done, to collect and publiſh in a ſeparate volume, all ſuch parts of the preſent edition as are new, and to ſubjoin the additional

additional Plates, and a General Index for the former editions.

With a view to illuſtrate this work, and to give me an opportunity of adverting more particularly than can be done in a general ſyſtem, to many of the more important parts of Surgery, I have, for many years paſt, been occaſionally employed in arranging for the preſs, narrations of ſuch accidents and diſeaſes, in the management of which I have been perſonally concerned, as I conceive will anſwer this purpoſe; and they will be judged to be the more valuable, as a great proportion of all that I ſhall ſelect will relate to circumſtances, in which I have had occaſion to act on conſultation with other practitioners. Two volumes of this kind, I have reaſon to think, will be ready in the courſe of the enſuing year, and they will be publiſhed under the title of CONSULTATIONS and OBSERVATIONS on many of the more important Parts of Surgery.

EDINBURGH,
Dec. 1. 1795.

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A

A

SYSTEM

OF

SURGERY.

CHAPTER I.

On INFLAMMATION.

SECTION I.

Of the Symptoms and Causes of Inflammation.

§ 1. *General Remarks on Inflammation.*

INFLAMMATION is the moſt frequent, as it is perhaps the moſt important object of the Surgeon's attention. We daily meet with it as the conſequence of operations, and in the treatment of Wounds, Contuſions, and Ulcers. It is therefore

confidered as a fit fubject for the firft article of a Syftem of Surgery.

Every organifed part of the body is liable to inflame, but as the inflammation of internal parts is generally productive of fymptoms which more properly fall within the province of Medicine, it would here be foreign to our purpofe to enter upon the difcuffion of thefe. We fhall therefore confider this fymptom, and its various confequences, as they moft frequently occur externally; and as all the phœnomena of inflammation will be underftood from the confideration of phlegmon, or local inflammation, any obfervations to be offered fhall be more particularly confined to that variety of the difeafe.

§ 2. *Of the Symptoms and Terminations of Phlegmon.*

PHLEGMON is a term which we apply to a circumfcribed tumor, attended with heat, rednefs, tenfion, and a throbbing pain. Thefe are the firft appearances of

phlegmon;

phlegmon; and when they are slight, and the part affected of no great extent, they have frequently no apparent influence on the general system. But, when more considerable, and the inflammation extensive, the pulse becomes quick, full, and generally hard; and at the same time, the patient complains of universal heat, thirst, and other symptoms of fever.

If, either by an effort of nature, or by the application of proper remedies, the pain, heat, and tension are removed, the other symptoms we have mentioned, and which in a great measure or altogether depended on these, likewise abate, and the patient soon gets well. This is reckoned the first, and is generally the most desireable manner in which inflammation terminates, and is termed Resolution.

If, however, the several symptoms of heat, pain, and redness, instead of diminishing, rather increase; if the febrile symptoms are likewise augmented, and the tumor gradually acquires a larger size, turns soft, somewhat prominent in

the middle, or towards its moſt depending part, gets a clear ſhining appearance, and becomes leſs painful; the different ſymptoms of fever then abate, and a fluid, upon preſſure, is found to fluctuate underneath. In this manner inflammation is ſaid to terminate in what is termed Suppuration.

But if the pain, redneſs, and tenſion of the part increaſe, while the fulneſs of pulſe and other febrile ſymptoms are augmented, at the ſame time that there is little change in the tumor in point of ſize, there is then much reaſon to ſuſpect that Gangrene or Mortification will enſue.

Mortification firſt appears by a change of colour in the part affected, which, from being of a bright red, comes to acquire a leaden or livid caſt, while ſmall veſicles, containing a thin acrid ſerum, are diſperſed over its ſurface—the pain abates—the pulſe ſinks, but continues frequent—the tumor at laſt loſes its tenſeneſs—turns black and flaccid—and thus terminates in a real mortified or dead ſpot.

These

Thefe are the feveral ordinary confequences of inflammation. We fhall now proceed to treat of the various caufes of the difeafe, and laftly of the method of cure.

§ 3. *Of the exciting and predifpofing Caufes of Inflammation.*

THE exciting caufes of inflammation, are in general whatever tend to ftimulate, or produce pain and irritation: Such as, all variety of wounds, whether fimple, lacerated, or punctured, and with whatever inftrument they may be produced—alfo bruifes and burns, whether by the actual or potential cautery—likewife all corrofive and irritating applications, as, the different ftrong acids, cantharides, and all the clafs of rubefacientia. Ligatures may likewife be mentioned, and tumors that act as ligatures by producing an undue compreffion on any of the blood-veffels and nerves; as alfo, violent exercife of any particular member, and cold applied to a particular part.

Theſe are the moſt common external cauſes of phlegmon: but there are others which tend to produce the ſame effect, which we are to conſider entirely as internal; ſuch are the different vitiated ſtates of the fluids, excited by the preſence of morbid matters of different kinds, as the matter of Lues Venerea, Small Pox, Meaſles, and Scrophula. Fevers too that end in critical inflammation and conſequent abſceſſes, ſeem likewiſe to act in the ſame manner.

Under one or other of theſe heads are comprehended almoſt all the exciting cauſes of inflammation. It is not improper, however, here to obſerve, that there are other cauſes, which, with propriety, may be ſaid to be of the prediſpoſing kind, by tending to produce ſuch a ſtate of the ſyſtem, as renders it more ſuſceptible of inflammatory complaints than it naturally would be. The moſt remarkable of theſe is, a full plethoric habit of body, induced either by a very nouriſhing diet, or want of exerciſe; or, perhaps, by a combina-

tion

tion of both. We also observe, that inflammatory diseases are more frequent in young than in old people, and in men more than in women.

§ 4. *Of the proximate Cause of Inflammation.*

VARIOUS opinions have prevailed on the proximate cause of inflammation: some of which have never been generally admitted, and others, after having prevailed for a time, have at last too been rejected.

The doctrine on this subject, which for some years has prevailed in this University, as it readily accounts for the action of the several exciting causes of inflammation, for the effects of the disease, and for the operation of the medicines employed in the cure, appears most clearly to explain the proximate cause of all inflammatory affections.

From observing the different phænomena which occur in inflammation, an increased action of the vessels of the part affected seems in every case evidently to take

place; and as, from an increafed action in the arteries of a part, all the circumftances of inflammation are explained, we are hence induced to confider this ftate of the veffels as the proximate caufe of the diforder.

This opinion, as we have already obferved, is greatly fupported by a review of the feveral exciting caufes of inflammation; which being in general of an irritating or ftimulating nature, their application to living or fenfible parts, muft of courfe be productive of a preternatural exertion of the veffels in fuch parts. Thus, to reafon from analogy, we obferve, that fternutatories applied to the internal membrane of the nofe—the aliments to the ftomach and inteftines—and the blood to the internal furface of the veffels in which it is contained, all ferve as fo many ftimulants to action in thefe different parts; and in the fame manner, corrofive or other irritating fubftances, when applied to the coats of the arteries, naturally in them produce the

the same effects as in other muscular organs.

We thus in a very probable manner account for the action of all direct stimulants in the production of inflammation. It frequently happens, however, that inflammation takes place when the application of stimulants, or irritating substances, cannot in any degree be suspected. In such cases, the increased action of the arteries and of the heart when it occurs, seems to be supported by a spasm or constriction of the extreme vessels, either of a particular part, or of the general system. And hence, from the known tonic or astringent power of cold, we account for the frequent occurrence of inflammatory affections in our cold seasons of winter and spring; and hence, too, the throat and lungs are more especially subject to disorders attended with inflammation, from these parts being more particularly liable to the immediate action of cold.

Dr Cullen, who considered spasm as the sole proximate cause of inflammation, when treating

treating of this ſubject, ſays, "That a ſpaſm of the extreme veſſels takes place in inflammation, is preſumed from what is at the ſame time the ſtate of the whole arterial ſyſtem. In all conſiderable inflammations, though ariſing in one part only, an affection is communicated to the whole ſyſtem; in conſequence of which, an inflammation is readily produced in other parts beſides that firſt affected. This general affection is well known to phyſicians, under the name of *Diatheſis Phlogiſtica*. It moſt commonly appears in perſons of the moſt rigid fibres; is often manifeſtly induced by the tonic or aſtringent power of cold; is increaſed by all tonic and ſtimulant powers applied to the body; is always attended by a hardneſs of the pulſe; and is moſt effectually taken off by the relaxing power of blood-letting. From theſe circumſtances, it is probable, that the diatheſis phlogiſtica conſiſts in an increaſed tone, or contractility, and perhaps contraction,

traction, of the muscular fibres of the whole arterial system *."

An increased action in the vessels of a part, being admitted as the proximate cause of inflammation, we can pretty certainly account for the operation of the several predisposing causes; and upon the same supposition may be explained the different symptoms which occur in the course of the disorder.

Thus the increased action of an artery, by forcing or propelling into the smaller sets of vessels, red globules, and other dense parts of the blood which they cannot easily transmit, very readily accounts for the redness, tumor, tension, and throbbing pain, which occur in every case of phlegmon: As likewise, in some measure, for the augmentation of heat, which increased attrition must in such cases always produce. It is probable, however, that the accumulation of animal heat alone, which must necessarily arise from a larger proportion of blood being sent to a part than it naturally

* See First Lines of the Practice of Physic, p. 88.

rally receives, will have a conſiderable influence in the production of an increaſed degree of heat.

The method of cure, as we have already obſerved, tends alſo to confirm the general doctrine we have given of the cauſe. Thus the moſt effectual remedies, in almoſt every caſe of inflammation, are exactly ſuch as would be recommended for the removal of an increaſed tone in any particular part, were we convinced that this alone was the diſeaſe, *viz.* A low diet, blood-letting, and other weakening evacuations, together with emollient ſedative applications: but this, when we come to ſpeak more particularly of the different remedies, will more fully appear.

In almoſt every caſe of external inflammation, except, perhaps, when it is very extenſive, and runs deep, and the different ſymptoms are all violent, we may venture upon a favourable prognoſis. For, if Reſolution, which is the eaſieſt and moſt deſirable termination, is not effected, Suppuration will moſt readily be the conſe-

quence;

quence; and the danger occurring from this, when the constitution is otherwise healthy, is not commonly very material.

When, however, the inflamed part is of considerable extent, while the different local and general symptoms of fever at the same time are violent, a good deal of danger is to be dreaded. For, besides the risk to the constitution from the fever itself, if the symptoms continue high for any length of time, without showing some tendency either to Resolution or Suppuration, Gangrene will, in such circumstances, probably follow; and in what manner this may terminate, is always uncertain.

SECTION II.

Of the Treatment of Inflammation by Resolution.

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§ 1. Resolution of inflamed Tumors, in some instances, not to be attempted.

IN the treatment of phlegmon, we ought, in general, to have it in view to accomplish a cure by resolution. Some exceptions, however, occur to this, in which the removal of inflammatory tumors by resolution ought not to be attempted.

Thus, tumors succeeding to fevers, and other internal disorders, ought always to be brought to suppuration; for nature in that way pointing out an exit for some superabundance of fluids existing in the system, it might probably be productive of hazard to give her any interruption. It is, on the contrary, indeed, in all such cases

cafes the fafeft practice to affift her as much as poffible, by the ufe of fuch applications as will moft readily bring the fwelling to fuppuration.

There are other tumors again, proceeding from an internal caufe too, in which it is perhaps beft to do nothing either with a view to refolve or fuppurate: Thus, in fwellings proceeding from fcrophula, it might be dangerous to make ufe of repellent applications, at the fame time that it is not often adivifeable to promote their fuppuration, from the cure of the fores which fucceed to this proving always tedious and uncertain; and fuch fwellings, it is well known, may remain for a great length of time, without any fort of rifk to the patient; fo that, in general, we think it moft prudent never to meddle with them.

In Lues Venerea too, as we are poffeffed of almoft a certain antidote for the diforder; and as buboes, and other inflammatory fwellings that occur in it, are commonly, when opened, exceedingly troublefome,

and

and very difficult of cure; it is perhaps, for theſe reaſons, the beſt practice to remove them by diſcuſſion: And this more eſpecially, as their being brought to ſuppuration, can by no means free the patient from the diſeaſe; but leaves him, on the contrary, under the ſame neceſſity of undergoing a mercurial courſe, as if no evacuation from the tumor had taken place.

In caſes of Eryſipelas likewiſe, which is a variety of inflammation, but which is eaſily diſtinguiſhed from real phlegmon, by the colour of the inflamed part not being of ſuch a bright red, but having a more dark copper-like appearance; and by the ſwelling that occurs in it, not riſing evidently into a tumor, but being rather diffuſed, and ending as it were imperceptibly upon the ſurrounding parts, we ſhould always endeavour to remove the diſeaſe by diſcuſſion; as, when ſwellings of this nature ſuppurate, they ſeldom either afford good pus, or heal kindly when opened.

Hence

Hence it appears, that with a few exceptions, it is the beft practice to endeavour to remove inflammatory tumors by refolution.

§ 2. *Of the Remedies to be employed for the Refolution of an inflamed Part.*

In the incipient ftate of phlegmon, when the fymptoms are not fo violent as to affect the general fyftem, topical remedies alone, with a due attention to regimen, often prove fuccefsful. But when, on the contrary, the inflammation runs high, and accompanied with general fymptoms of fever, it then becomes neceffary at the fame time to pay attention to thefe.

In almoft every cafe of phlegmon, it has been the prevailing practice to employ warm fomentations and cataplafms; but, as warm emollient applications have the moft powerful influence in promoting fuppuration, as will be fhewn more particu-

larly hereafter, the uſe of ſuch remedies, while the reſolution of ſwellings is practicable, muſt neceſſarily be improper.

In the treatment of phlegmon by reſolution, the firſt circumſtance requiring attention, is the removal of the exciting cauſes of the diſeaſe; ſuch as, extraneous bodies in wounds; pieces of fractured bones; luxations; and, in ſhort, whatever may appear to have influence in exciting pain or irritation.

Of the various applications uſually employed for inflammation, thoſe of a ſedative nature are chiefly to be depended on; and, next to theſe, emollients.

Of the former kind, may be conſidered all the different preparations of lead diſſolved in vinegar; and it is preſumed too, that the vegetable acid, by itſelf, likewiſe acts as a ſedative.

As emollients, the bland expreſſed oils are often uſed with advantage; as alſo ointments of a ſoft conſiſtence, made with any of theſe and pure wax.

§ 3. *Remarks on the Preparations of Lead, and other sedative Applications.*

In speaking of sedative applications for external inflammation, it will not be understood that I mean to recommend indiscriminately the whole class of medicines which in different circumstances are found to be of this nature. Thus, opium, though one of the most powerful of all sedatives, yet, as its external application to the human body is usually attended with some degree of irritation, however useful it may at times have been found in some variety of inflammatory affections, it will never probably, as an external application, be generally admitted.

Warm emolient fomentations, too, though they no doubt, act powerfully as sedatives, as tending, from their nature, more effectually to remove tension and pain, than perhaps any other remedy, yet, from much experience of their effects, in local inflammation, I have long been con-

vinced, when the reſolution of inflamed tumors is wiſhed for, that ſuch applications very commonly do harm: For, in general, they either tend to promote ſuppuration, or when long continued, are apt to induce ſuch a relaxed ſtate of the parts, as renders the thorough removal of the tumor always tedious.

No ſuch reaſons, however, have occurred againſt the preparations of lead. On the contrary, we may affirm, that while they may be uſed with perfect ſafety, they prove alſo much more powerful as diſcutients than any other remedy with which we are acquainted.

We are induced to ſuppoſe, that the preparations of lead act chiefly as ſedatives, not only from their effects upon the ſtomach, which appear all to be of a ſedative tenden y; but from their immediate and obvious operation when applied externally to an inflamed part: which, when the preparation is of a proper ſtrength, is almoſt conſtantly an abatement of the different ſymptoms of pain and tenſion,

tension, at the same time that an agreeable soothing sensation s communicated to all the parts to which they are applied.

Mr Goulard, in his dissertation upon the external use of the preparations of lead, recommends them as almost equally proper in every stage of inflammation. Even when tumors have come to full suppuration, a proper use, he says, of his *Extractum Saturni*, not by its repelling quality, for he will not allow it to be possessed of such, but by its occasioning an exsudation of the contained matter, renders it almost always unnecessary, he says, to open them.

He likewise mentions the same remedy as a proper application in gangrene. From my own experience, however, of the preparations of lead, I cannot take upon me to recommend them in either of these cases. I have, indeed, made trial of them in gangrenous cases, but without any evident effects being produced by them: and, however strongly they may be recom-

mended by Mr Goulard, in the cure of abſceſſes, or collections of completely formed pus, I muſt own, that, in this ſtate of the diſeaſe, I never thought of employing them. So that it is in the real inflammatory ſtate of the complaint only, and while a cure by diſcuſſion may ſtill be expected, that ſuch applications are here meant to be adviſed.

From the known deliterious effects of lead, when taken into the ſyſtem, an objection has, by ſome authors, been raiſed against a free uſe of the preparations of lead, even when externally applied.

That lead, in different forms, has, on being taken into the ſtomach, frequently proved poiſonous, there is no reaſon to doubt; and that, in ſome particular inſtances, diſagreeable ſymptoms have occurred, where ſome of the preparations of lead have been externally uſed, is alſo perhaps certain. That ſuch bad ſymptoms, however, if they were not merely accidental, or produced by other cauſes, are, at leaſt in general, very rare effects of the remedy in queſtion,

queſtion, I can venture, I think, certainly to affirm. For in all the experience which I have had of the external application of the preparations of lead, and in many caſes, particularly of burns, I have known the greateſt part of the whole ſurface of the body covered with them for days, nay, even for weeks together, I do not recollect an inſtance of any diſagreeable ſymptom being produced by them.

Of all the preparations of lead for external uſe, *Saccharum Saturni*, or *Ceruſſa Acetata*, as it is now termed, is perhaps the beſt, as it has all the advantages of the others; while, in it the exact ſtrength of the preparation is more certainly aſcertained. For although in the *Extrait de Saturn* of Goulard, as likewiſe in the *Acetum Lythargirites* of our Diſpenſatories, which are both, it may be obſerved, very nearly the ſame, we may be very certain of the quantity of lead employed to the vinegar; yet we can never, but by cryſtalliſation, know exactly, or even nearly, how much of the lead the menſtruum may have diſ-

 ſolved,

ſolved, as this muſt depend upon different circumſtances, and particularly on the ſtrength of the acid, and exact degree of heat that may be employed; which are points, we may obſerve, not always in our power exactly to regulate. For theſe reaſons, therefore, the ſalt, or ſugar of lead, as it is called, ſhould be always preferred, when it can be procured in an unadulterated ſtate; but, as of late it has often been found mixed with chalk, and other ſubſtances not ſoluble in water, I have elſewhere had occaſion to remark, that till this abuſe is obviated, the *Acetum Lythargiri* will neceſſarily be preferred.

The beſt mode of applying the remedy, ſeems to be in the form of a watery ſolution; for the preparation of which, the following proportions are, for general uſe, found to anſwer:

℞. Sacchar. ſaturn. unc. ſs.
Solve in acet. pur. unc. iv.
Et adde aq. fontan. deſtillat. lb. ii.

The addition of vinegar renders the ſolution much more complete than it other-

wiſe

wise would be; and without it, indeed, when such a large proportion of the lead is used, a considerable part of it commonly separates and falls to the bottom.

This is the form which I commonly employ for the use of this remedy; but as Goulard's extract and water are preferred by many, I think it right to mention his method of preparing them.—The extract is prepared as follows:

To each quart, containing thirty-two ounces, of French wine-vinegar, add one pound of litharge of gold. Put them into a glazed earthen vessel, and let them simmer for an hour, or an hour and a quarter, upon a gentle fire, taking care to stir them during the ebullition with a wooden spatula: The vessel is now to be removed from the fire; and the fæces being allowed to subside, the liquor upon the top must be poured into bottles for use.

The water used by Mr Goulard, which he terms the *Vegeto-mineral water*, is prepared by adding two tea-spoonfuls, which he specifies to be one hundred drops, of this

this extract, to a quart of water, and four tea-ſpoonfuls of brandy. The quantity of the extract and brandy to be diminiſhed or increaſed according to the nature of the diſorder, or degree of ſenſibility in the part affected.

In making uſe of either of theſe ſolutions, as it is of conſequence to have the parts affected kept conſtantly moiſt, cataplaſms prepared with them and crumb of bread, in general anſwer that intention exceedingly well. But, when the inflamed part is ſo tender and painful as not eaſily to bear the weight of a poultice, a circumſtance by no means uncommon, pieces of ſoft linen, moiſtened with the ſolution, anſwer the purpoſe tolerably well: Although, when this objection to the uſe of cataplaſms does not occur, as they retain the moiſture longer, they ſhould always be preferred. Theſe applications ſhould be always made when cold, or at leaſt with no greater warmth than is merely neceſſary for preventing pain or uneaſineſs; they ſhould be kept almoſt conſtant-

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ly at the part, and renewed always before turning hard.

Among the remedies recommended for external use in cases of inflammation, we mentioned Emollients. These, when the tension and irritation on the skin are considerable, prove often serviceable: the parts affected, being, in this state of the disease, gently rubbed over with any of the mild expressed oils two or three times a-day, the tension, irritation, and pain, are thereby much relieved, and the discussion of the tumor thereby greatly promoted.

In every case of inflammation, indeed, emollient applications would afford relief. But as the preparations of lead prove still more effectual, and as unguents of every kind tend considerably to blunt the action of lead; these two sets of remedies should never be combined: Nor should emollients be ever prescribed, but when irritation, tension, or pain, are so considerable as to render their application indispensible.

When parts affected with inflammation are not very tender, and especially when they

they lie deep, the application of the vegetable acid is often employed with advantage; and the beſt form of uſing it is in cataplaſms, made with the ſtrongeſt vinegar and crumb of bread. In ſuch caſes, too, I have ſometimes found, that an alternate uſe of this remedy, with the ſaturnine ſolution already pointed out, has produced more beneficial effects, than we commonly derive from the continued uſe of any one of them.

At the ſame time that theſe applications are continued, bleeding with leeches, or cupping and ſcarifying as near as poſſible to the part affected, proves generally uſeful, and, in no caſe of local inflammation, ſhould ever be omitted. In all ſuch caſes, the whole body, and more eſpecially the diſeaſed part, ſhould be preſerved as free as poſſible from every kind of motion: The patient ſhould be kept upon a cooling regimen, and ſhould abſtain entirely from the uſe of wine and ſpirits.

In all the ſlighter degrees of inflammation, a due perſeverance in the remedies

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we have mentioned, will, in general, be found sufficient. But, when the pulse is quick, full, or hard, and accompanied with other symptoms of fever, general blood-letting ought never to be omitted; the quantity to be determined by the violence of the disorder, age, and strength of the patient. The use of gentle laxatives, too, together with cooling diaphoretics, prove in such circumstances very commonly useful.

These evacuations being premised, we ought to endeavour to procure ease and rest to the patient; which in the treatment of every inflammatory tumor is an object of the first importance. Where the patient is deprived of natural rest, and in all cases accompanied with pain and irritation, opium is the remedy upon which alone we can place dependence. In large wounds, especially after amputations and other capital operations; in punctures of all kinds too; large doses of opium very commonly prove useful. In all such cases, however, opium, in order

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to have a proper influence, muſt be given in full doſes: otherwiſe it often does harm, a circumſtance to be conſidered as the chief reaſon of opiates having by many been unjuſtly condemned in every caſe of inflammation.

With proper attention to the circumſtances we have mentioned, the reſolution of the tumor will, in general, begin to take place in the courſe of three or four days; at leaſt before the end of this period, it may for the moſt part be known how the diſorder will terminate. If the heat, pain, and other attending ſymptoms, abate; and eſpecially if the tumor begins to decreaſe, without the appearance of Gangrene, we may then, with ſome certainty, conclude, that perſeverance in the ſame mode of treatment, will at laſt accompliſh a cure by reſolution.

But, on the contrary, if all the ſymptoms rather increaſe; and eſpecially, if the tumor turns larger, and ſomewhat ſoft, with an increaſe of throbbing pain; we may then with certainty conclude that

ſuppuration

fuppuration will take place: In fuch circumftances, thofe applications fhould be laid afide that were advifed while a cure by refolution was judged to be practicable, at the fame time that nature fhould be as much as poffible affifted in the formation of pus, or what is called *maturation* of the tumor.

For this reafon, blood-letting, and other evacuations which may have been advifable in attempting to remove the fwelling by difcuffion, fhould never be carried a greater length than may be merely neceffary for rendering the febrile fymptoms moderate; for where the fyftem is much reduced, and fuppuration afterwards takes place, the maturation of the tumor not only proceeds flowly, but the patient becomes unable to bear the difcharge that muft enfue from the opening or burfting of the abfcefs.

But although we have remarked above, that if fome appearances of refolution do not take place in the courfe of a few days fuppuration will moft probably enfue,

and that consequently a change of treatment will become necessary, yet this, it must be observed, is to be taken in a limited sense. For the time of desisting from one mode of treatment and commencing the other, must always in some measure depend on the seat of the inflammation; such disorders being in some parts much more apt to terminate in speedy suppuration than in others.

Thus, in the cellular membrane, as well as in every soft part of the body, inflammatory tumors terminate much more readily and quickly than when tough membranous parts are affected. Hence, in the coats of the eye and of the testicles, very violent inflammation often continues for many days, nay, even for weeks, without either abating in the symptoms, or ending in suppuration. In such cases, therefore, that go on even to considerable length, we need not be afraid of continuing the discutient applications for a much longer time than otherwise would be proper; nor should we ever be deterred from using

them, unless either an evident suppuration has taken place, or there appears from the violence of the symptoms a considerable risk, either of gangrene, or of some incurable obstruction: In which event, we should no doubt endeavour to promote the suppuration of the tumor.

Among other applications for the removal of inflammation by resolution, blisters ought not to be omitted, and I have in some instances known them prove useful, even where suppuration has taken place. In the early stages of inflammation, blisters should be applied directly upon the pained part; but when the skin is much inflamed, they excite so much pain that we rather apply them to the contiguous sound parts: in this manner they have appeared to promote the discussion of venereal buboes, even where matter has been evidently formed.

SECTION III.

Of Suppuration.

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§ 1. *General Remarks on Suppuration.*

BY the term *Suppuration*, is underſtood, that proceſs, by which the contents of tumors and ulcers are converted into a whitiſh, thick, opaque, ſomewhat fetid matter, termed *Pus*. This, for the moſt part, is the effect of nature alone; but we know from experience, that the formation of pus can be promoted by the efforts of art: Before proceeding, however, to conſider the treatment neceſſary for this purpoſe, it will not be improper to premiſe an examination of the different opinions that have prevailed on the nature of pus, and this eſpecially, as it will tend to elucidate

cidate many of the obſervations that will afterwards occur.

§ 2. *Of the Formation of Pus.*

By many pus has been ſuppoſed to conſiſt in a diſſolution of the blood-veſſels, nerves, muſcles, and other ſolids, of the parts in which inflammation occurs.

This was the opinion of Boerhaave *, Platner †, and many others.

Others, again, have ſupppoſed purulent matter to be formed in the blood; and that it is ſecreted, in its complete ſtate, into Abſceſſes, Wounds, and Ulcers.

That the firſt of theſe opinions is ill founded, is obvious from our obſerving, that very extenſive wounds and ulcers continue often for a great length of time, without being attended with any loſs of ſubſtance; which would not be the caſe, if the diſcharge which they afford was produced by a diſſolution of the ſolids

* Aphoriſm, 387.

† V. Inſtitutiones Chirurgiæ, § 54. &c.

of the parts in which they are ſeated. Iſſues, likewiſe, afford inſtances of this; by their yielding, for a number of years, even a daily diſcharge of pus, without producing any evident alteration in the ſtate of the ſolids.

The other opinion has probably ariſen from abſceſſes being ſometimes obſerved to form ſuddenly, and without being preceded by any obvious inflammation; ſo that the matter contained in them has been ſuppoſed to be at once depoſited from the blood, in a ſtate completely purulent.

Previous, however, to the formation of pus in any part, if due attention was given, ſome degree of inflammation, it is probable, would be always obſerved. But as inflammation often occurs in a ſlight degree, and without being attended with much pain, it may ſometimes proceed to the ſtate of ſuppuration, without being ſooner obſerved by the patient: and this we know, in internal abſceſſes eſpecially, is not unfrequently the caſe. We are told, indeed, of very quick tranſlations of matter

matter from one part of the body to another: but if ſuch inſtances ever occur without the intervention of inflammation, a circumſtance, however, much to be doubted; yet, ſtill, it is no material objection to our argument, as ſuch caſes can only be conſidered as *particular*, and very *unuſual*, exertions of the ſyſtem.

It may be remarked alſo, that if purulent matter frequently exiſted in the blood, as it undoubtedly would do if this opinion was well founded; in ſome caſes, at leaſt, it would ſurely be liable to detection: but no matter of this kind has ever yet been diſcovered in blood. Such pus, too, as is found in wounds and ulcers, would not at firſt appear thin and ſerous, as it always does, if depoſited in a completely formed ſtate.

The moſt probable opinion hitherto advanced concerning the formation of pus, is, that it is a change produced by a certain degree of fermentation, upon the ſerous part of the blood, after being ſecreted into the cavities of ulcers and abſceſſes;

and that this fermentation is produced either by the natural heat of the part, or by heat artificially applied.

That it is the ſerum only of blood, which is proper for the formation of pus, and that it is produced by the application of a certain degree of heat, was firſt made probable by an experiment related by Sir John Pringle in the appendix to his treatiſe on the diſeaſes of the army *; and the opinion was afterwards confirmed by other experiments of the ſame nature made by Mr Gaber, and related by him at full length in the ſecond volume of the *Acta Taurinenſia*.

Sir John Pringle found, that pure ſerum, kept for ſome days in a furnace regulated to the human heat, after becoming turbid, dropped a white purulent ſediment. The craſſamentum of blood, in the ſame ſpace of time and degree of heat, changed from a deep crimſon to a dark livid colour; ſo that, when any part of it was mixed with water, it appeared of a tawney

* Experiment xlv.

tawney hue. Serum, digested with a few red globules, and in the same circumstances, was of the same colour.

Mr Gaber's experiments tend all to elucidate and corroborate the same opinion, namely, That pure unmixed pus is formed only from serum. The addition of red globules to serum, and crassamentum digested by itself, exhibited nearly the same appearances as those quoted above from Sir John Pringle *. Fat, which is thought by many to be a principal ingredient in the composition of pus, was found by Mr Gaber, when exposed to the above mentioned trial, to exhibit no appearances of that matter; nor were any of the fleshy parts when digested either with serum or water, convertible into it.

From all which, it may be concluded, that the addition of any of these articles to serum, instead of rendering it capable of producing good pus, has always the very contrary effect; and that it is pure serum alone from which pus can be obtained.

* V. Act. Taurin. vol. ii. page 87.

It may here be remarked, once for all, that what is meant by *pure ſerum*, is not that finer halitus, which, in a healthy ſtate of the body, is conſtantly ſecreting into the different cavities, merely for the purpoſe of lubricating and keeping them moiſt, and which is again generally abſorbed; but it is a ſerous fluid of the ſame nature with that which ſeparates ſpontaneouſly from blood, upon that fluid being allowed to remain at reſt, when diſcharged either from an artery or a vein; and in which, though there is never ſuppoſed to be any mixture of red globules, yet there is certainly always more or leſs of the coagulable lymph; ſome proportion of which ſeems abſolutely neceſſary for ſerum to poſſeſs, to render it capable of producing pus.

The ſeveral effects we have mentioned as being produced by digeſtion upon ſerum out of the body, there is reaſon to think will occur from it, when collected in the cavities of ulcers and abſceſſes; and, from the reſult of the different experiments alluded

luded to, it is probable, that, according as ſerum is there depoſited more or leſs free from mixtures of fat, red globules, and other ſubſtances, it will yield pus of a more pure or vitiated nature.

This account of the formation of pus, is the moſt ſatisfactory, we conceive, of any that has as yet been given; and this eſpecially, as it renders evident, as will afterwards appear, the operation of the remedies which uſually prove moſt effectual in promoting ſuppuration.

§ 3. *Of the neceſſary Remedies for promoting Suppuration.*

When, for the reaſons we have enumerated, it is judged moſt proper to uſe means for promoting the ſuppuration of an inflamed part, then all the remedies we have recommended, in order to promote the reſolution of the tumor, muſt be laid aſide.

No farther evacuations, as was obſerved above, are to be admitted; and if the patient

tient has been much weakened, a full allowance of diet, and even a proportion of wine will be neceſſary.

For although a high degree of inflammation proves always unfavourable to ſuppuration, by promoting the progreſs of Gangrene, as will afterwards be mentioned, or as tending to propel into the cellular membrane, which in general is the ſeat of abſceſſes, a quantity of red globules, together with the ſerum of the blood, which alone ought to be extravaſated for the formation of good pus; yet, in order to have a due quantity of ſerum ſecreted for the purpoſe of ſuppuration; and, at the ſame time, to have its fermentation properly carried on, the different inflammatory ſymptoms muſt never be allowed to ſubſide ſuddenly; otherwiſe an abſceſs, containing ill-digeſted matter, as it is termed, will moſt probably be produced.

Thus we find in ſmall-pox, which are ſo many ſmall phlegmaſiæ, that although blood-letting and other evacuations to a certain extent prove frequently uſeful, that

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a proper ſuppuration never takes place of the patient has been much debilitated by any conſiderable diſcharge; and the ſame thing very certainly occurs, in ſimilar circumſtances, in abſceſſes of a larger ſize. The patient, therefore, ſhould neither be allowed to live ſo fully as might raiſe the inflammation too high, nor reduced in ſuch a manner, by evacuations and low diet, as to induce the contrary extreme.

Having in this manner endeavoured to procure a diſcharge into the cellular membrane, of ſerum proper for the formation of pus, the next circumſtance requiring attention, is, that a due fermentation be excited, and preſerved in it, ſo that its progreſs towards perfect maturation, may go eaſily and regularly on.

This indication is chiefly effected by the uſe of ſuch applications as tend to preſerve a proper and conſtant degree of heat in the part affected: inſomuch, that t ſeems probably owing to a want of atention to this circumſtance, that the greateſt part of all the ſofter ſwellings do

not

not ſuppurate; and that according to the degree of heat in which they are kept, whether from the proportion of inflammation by which they are at firſt produced, or from the natural heat of the part they are ſeated in, they form into tumors of melicerous, ſteatomatous, and other conſiſtences. For unleſs a due degree of heat be applied and continued, ſerum being merely extravaſated will never produce pus: Hence in aſcites, and other dropſical diſorders, large quantities of ſerum remain in this ſtate for a great length of time, without any ſuppuration taking place; and this merely from ſuch collections being produced without any inflammation at firſt, ſo that no aſſiſtance is afforded from any degree of *preternatural* heat; and the *natural* heat of ſuch parts, in which ſerous collections uſually occur, is ſeldom ſo conſiderable as to produce ſuch an effect.

The degree of heat beſt ſuited for promoting ſuppuration, is not perhaps eaſily to be determined; but the more conſider-

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able it is, at least to a certain extent, the more quickly, it is probable, pus will be formed.

This we find, indeed, from Mr Gaber's experiments, is so far the case *: and the observation is likewise confirmed by daily experience in every case of phlegmon; in which the tumor, cæteris paribus, always proceeds more quickly or slowly to suppuration, as it is seated nearer to, or at a greater distance from, the heart. Hence, in any of the extremities, particularly in the legs, inflammatory disorders proceed slowly to suppuration; while those on the trunk, and about the head, go on more quickly. Thus, inflammation of the ears and throat frequently arrives at a thorough maturation, and even bursts of itself in the course of forty-eight hours from the first attack.

We ought, therefore, to be particularly attentive to the preservation of a due degree

* When speaking of pus being formed in, and subsiding from serum digested in a degree of heat equal to that of the human body, Mr Gaber says, "Eo autem citius subsidebat quo calor erat major." *Loco citato.*

degree of heat in every inflamed part intended to be brought to ſuppuration; but more eſpecially in ſituations very diſtant from the heart, where artificial heat is moſt wanted, and where, if duly applied, almoſt every tumor, though ſeated on the extremities, might probably be made to ſuppurate in the ſame ſpace of time with thoſe in the ears and other parts we have juſt taken notice of.

I am not only convinced, by experience, of what is here aſſerted of the advantages to be obtained from a due attention to this matter; but alſo, from a courſe of experiments I was engaged in ſome years ago upon the ſame ſubject. But as the reſult of theſe were almoſt exactly ſimilar to thoſe related by Mr Gaber, no exact account was preſerved of them: this, however, I particularly remember, that in a heat equal to 100° of Farenheit's thermometer, the depoſition of matter from ſerum took place in little more than half the time that was requiſite for the ſame effect at even eighty degrees.

It

It was the profecution of thefe experiments that firft fuggefted to me the probability of the advantages to be derived from the prefervation of a due degree of heat in inflamed parts; and I have accordingly, on many occafions fince that period, found the treatment of fuch cafes go on much more eafily than otherwife I fhould either have expected or have been able to explain.

Warm fomentations and cataplafms are the means commonly employed for the application of heat to an inflamed part; and when regularly and frequently renewed, nothing, it is probable, can more effectually anfwer the purpofe. But, in the ordinary manner in which they are applied, being renewed only once, or at moft twice, in the day, they muft frequently do more harm than good. For as foon as the degree of heat which they at firft poffefs, is diffipated, the moifture which they keep up, with the confequent evaporation that enfues, muft always render the part much colder

colder than if it had been merely wrapped in flannel, without the uſe of any ſuch application.

In order to receive all the advantages of ſuch remedies, the part affected ſhould be well fomented with flannels preſſed out of any warm emollient decoction, applied as warm as the patient can eaſily bear them, continued at leaſt half an hour at once, and renewed four or five times a-day.

Immediately after the fomentation is over, a large emollient poultice ſhould likewiſe be applied warm, and renewed every ſecond or third hour at fartheſt. Of all the forms recommended for emollient cataplaſms, a common milk-and-bread poultice, with a proportion of butter or oil, is perhaps the moſt eligible; as it not only poſſeſſes all the advantages of the others, but can at all times be more eaſily obtained.

Roaſted onions, garlic, and other acrid vegetables, are frequently made uſe of as additions to maturating cataplaſms: When there is not a due degree of inflammation

in

in the tumor, and when it appears probable that the ſuppuration would be quickened by the imflammatory ſymptoms being ſomewhat increaſed, the addition of ſuch ſubſtances may prove uſeful; but when ſtimulants are neceſſary in ſuch caſes, a ſmall proportion of ſtrained galbanum, or of any of the warm gums, diſſolved in the yolk of an egg, and added to the poultices, is not only a more elegant, but a more certain form of applying them. In ſome caſes, too, the ſame intention may be more certainly accompliſhed, by combining a ſmall quantity of cantharides with any application we mean to employ.

Whenever the inflammation, however, takes place in a proper degree, ſuch ſtimulating ſubſtances can never be neceſſary; and from the different obſervations we have already made, there is reaſon to think, that in many inſtances they might even do miſchief.

In ſuch tumors as, from their being attended with little or no inflammation, are commonly ſaid to be of a cold nature, as

they are generally indolent, and proceed very ſlowly to ſuppuration, plaſters compoſed of the warm gums are often employed with advantage: in ſuch caſes, they prove uſeful, not only by the ſtimulus and irritation which they excite, but by the heat which they tend to preſerve in the part. They become particularly neceſſary, when the patient, by being obliged to go abroad, cannot have cataplaſms frequently enough renewed, or ſo conveniently applied: but when ſome ſuch objection does not occur, the latter, for very obvious reaſons, ſhould always be preferred.

Dry cupping, as it is termed, that is, cupping without the uſe of the ſcarificator, upon, or as near as poſſible to, the part affected, is frequently uſed with advantage for promoting the ſuppuration of tumors: it is only, however, in ſuch as theſe laſt mentioned, where there ſeems to be a deficiency of inflammation, that it can ever either be neceſſary or uſeful; but in all tumors of an indolent nature, and where there

there is ftill fome probability of fuppuration taking place, I have feldom obferved fuch good effects from any other remedy.

Thefe different applications, under the reftrictions I have mentioned, being continued for a longer or fhorter period, according to the fize of the tumor, its fituation and other circumftances, a thorough fuppuration may, in general, at laft be expected.

Matter being fully formed in a tumor, is known by the remiffion of all the fymptoms which takes place; the dolor pulfatilis, that before was frequent, now goes off; and the patient complains of a more dull, conftant, heavy pain: the tumor points at fome particular part, generally near to its middle; where, if the matter is not encyfted, or deep-feated, a whitifh yellow appearance is obferved, inftead of a deep red that formerly took place; and the fluctuation of a fluid underneath, is, upon preffure, very evidently difcovered. Sometimes, indeed, when an abfcefs is thickly covered with mufcular and other parts;

and when, from concurring circumſtances, there can be little doubt of there being even a very conſiderable collection of matter, yet the fluctuation cannot be readily diſtinguiſhed: but it does not often happen, that matter is ſo very deeply lodged as not to be diſcovered upon proper examination.

This, however, is a circumſtance of much importance in practice, and deſerves, it may be remarked, more attention than it commonly meets with. In no part of the ſurgeon's employment, is experience in ſimilar caſes of more uſe to him than in this; and however ſimple it may appear, yet nothing, it is certain, more readily diſtinguiſhes a man of obſervation, than his being able eaſily to detect collections of deep-ſeated matter: whilſt nothing, on the contrary, ſo materially affects the character of a ſurgeon, as his having, in ſuch caſes, given an inaccurate or unjuſt prognoſis; for the event, in diſorders of this nature, comes generally at laſt to be clearly demonſtrated to all concerned.

Together

Together with the ſeveral local ſymptoms of the exiſtence of pus which I have enumerated, the frequent ſhiverings that patients are liable to on its firſt formation, may likewiſe be mentioned: theſe, however, ſeldom occur, ſo as to be diſtinctly obſerved, unleſs the collection is conſiderable, or ſeated internally in ſome of the viſcera. But, in every large abſceſs, they are almoſt conſtantly met with; and, when they appear along with other ſymptoms of ſuppuration, they tend always to aſcertain the real nature of the diſorder.

§ 4. *Of Abſceſſes, and of the proper Period for opening them.*

In the treatment of abſceſſes, it is a general rule, not to diſcharge their contents till a thorough ſuppuration has taken place: for, when laid open long before this period, and while any conſiderable hardneſs remains, they commonly prove troubleſome, and ſeldom heal kindly.

In ſome caſes, however, it is neceſſary to deviate from this general rule, and to open them a good deal ſooner; particularly in all ſuch critical abſceſſes as occur in malignant fevers. In the plague, too, we are commonly adviſed to open ſuch tumors as ſoon as they are tolerably advanced, and not to wait till they are fully maturated; for, in ſuch inſtances, it is found that the patient receives more benefit from an early diſcharge of matter, than he can ſuffer harm from having any ſwelling of this nature ſomewhat prematurely laid open.

Abſceſſes, too, ſituated on any of the joints, or upon either of the large cavities of the breaſt and abdomen, and more eſpecially when they ſeem to run deep, ſhould always be opened as ſoon as the leaſt fluctuation of matter is diſcovered. For, when the reſiſtance is on every ſide equal, they will juſt as readily point internally as outwardly; and the conſequence of a large abſceſs burſting into either of the large cavities, is well known moſt frequently

quently to prove fatal: An inſtance of which, in the following caſe, I had ſome time ago an opportunity of obſerving, which, with very little attention, might have been prevented.

A ſurgeon of eminence, and of extenſive practice, was applied to by a young healthy-looking man, with a large abſceſs upon the left ſide of his cheſt. A fluid, upon preſſure, was evidently found to fluctuate; and an opening was determined upon, to give vent to the matter. But the operator being much engaged in buſineſs, could not fix on an earlier period for doing it than the third day from the firſt application of the patient; who unluckily died ſuddenly in his bed, the night before the abſceſs was to have been opened.

On examining the body, the tumor was found to have diſappeared entirely, without any external opening being perceived; and, on laying open the thorax, the matter was obſerved to have burſt inwardly upon the lungs, and hence had produced immediate ſuffocation.

In all other cafes, however, the rule in opening abfceffes fhould be, to allow a thorough fuppuration to take place, before giving vent to the matter: We have next to determine on the mode in which it fhould be done.

§ 5. *Of the different Methods of opening Abfceffes.*

Two methods of opening abfceffes have been recommended by authors, namely, by Cauftic and Incifion. To the former, however, there are many objections. It is not attended with any fuperior advantage to a fimple incifion; upon a tender inflamed part, it gives much more pain; it is more flow in its effects; and the furgeon never has the command of it fo entirely as to deftroy thofe parts he would incline, and no more: for all the different kinds of cauftic, notwithftanding the greateft attention, will fometimes fpread farther, and penetrate deeper than was intended. Of this I, fome years ago, faw a very

very remarkable inſtance; and in a ſituation, too, in which it is not ſo likely to happen, as in other parts of the body.

Cauſtic was applied to the anterior part of the ſcrotum, with a view to produce a radical cure of a hydrocele: but whether there had been little water collected, or whether a preternatural adheſion of the teſtis to the tunica vaginalis had, at this part, been produced, is uncertain; but the cauſtic penetrated to the body of the teſticle, and gave the patient, as may readily be imagined, a great deal of diſtreſs. It did, to be ſure, accompliſh a cure: but the danger attending ſuch an accident, although it probably might not frequently occur, is, I ſhould imagine, a very ſtrong objection to the uſe of cauſtic in all ſuch caſes; and it is now indeed very generally, I believe, laid aſide, the preference being juſtly given to the ſcalpel.

When tumors are not large, they are commonly opened by a longitudinal inciſion, with a lancet or ſcalpel. This ſhould be

be ſo directed as to terminate at the moſt depending part of the ſwelling, and ſhould be of ſuch a ſize as may give a free diſcharge to the matter; about two thirds of the length of the tumor is for this purpoſe perfectly ſufficient.

When abſceſſes, however, are of great extent, they are commonly laid open through their whole length; and when the teguments have been much ſtretched, we are adviſed by many to take part of them away altogether. But this is a practice which ſeldom, or perhaps never, ſhould be followed; as there are ſcarcely any abſceſſes ſo large as to deſtroy entirely the contractile power of the integuments; and while this remains in any degree, there is ſtill cauſe to hope that the parts may again recover their former tone and dimenſions. It is ſurpriſing indeed to what extent this obſervation applies. In many inſtances, the ſkin has been known to recover its tone entirely, after having been for a time completely deprived of it.

These

Theſe are the ſeveral modes of opening abſceſſes with the ſcalpel. Some inconveniences, however, are found to proceed from all of them: As ſoon as an inciſion is made into a tumor, the whole contained matter is diſcharged ſuddenly and at once: Whereby, when the collection is conſiderable, faintings and other diſagreeable ſymptoms are often induced; and a free admiſſion of air is given to a great extent of ulcerated ſurface.

The bad effects of air on all varieties of ſores, is well known to every practitioner; but its pernicious influence, on a newly opened abſceſs, is often really aſtoniſhing. It firſt occaſions a total change in the nature of the matter, and turns it from perhaps a very laudable pus to an ill-digeſted ſanies; and afterwards brings on a quickneſs of pulſe, debilitating ſweats, and other ſuch ſymptoms, which, for the moſt part, when the collection has been conſiderable, either carries the patient off in a ſhort time, or terminates in a confirmed phthiſis, which ſooner or later proves fatal.

This I have, in many inſtances, had occaſion to obſerve; and that, in ſuch caſes, it is the admiſſion of air alone which produces theſe bad ſymptoms, is rendered highly probable from a great proportion of patients who have laboured under ſuch diſorders, having remained for a very conſiderable time, with large abſceſſes fully formed, and without having any hectic ſymptom whatever: But whenever they have exceeded an ordinary or moderate ſize, I have ſeldom known an inſtance of their being opened by a large inciſion, without almoſt every hectic ſymptom taking place; and this generally in leſs than forty-eight hours from the time of the abſceſs being laid open.

In what manner the admiſſion of air to an abſceſs operates in producing ſuch a powerful and ſudden effect, is perhaps difficult to determine. The irritation produced by it, on a large extent of ulcerated ſurface, may probably be one reaſon:—By acting as a ſtimulus on the extremities of the different abſorbents opening into the

ſore,

ſore, it may occaſion a larger abſorption of matter than would otherwiſe take place;—and it may likewiſe, by rendering the matter more putrid than before, give even to the ſame quantity abſorbed greater activity in producing the different ſymptoms of fever.

That this conjecture is well founded, with reſpect to an increaſe of putreſcency being the principal cauſe of the bad effects produced by the admiſſion of air to ſores, is, from different circumſtances, at leaſt exceedingly probable. For, in the firſt place, although the diſcharge from abſceſſes is commonly mild, and free from any diſagreeable fetor on their being newly laid open; it almoſt conſtantly becomes thin, acrid, and more fetid in the courſe of a few dreſſings, which is a certain proof of a greater degree of putreſcency having then taken place. On this principle, too, we may account for the operation of many of the remedies commonly employed in the treatment of ſores; and more eſpecially of thoſe powerful antiſeptics, fixed air and Peruvian bark.

We

We know from experiment likewiſe, that other ſubſtances, as well as that part of the blood from which pus is formed, is rendered putrid, and more quickly ſo, by the admiſſion of air, than otherwiſe, while in the ſame degree of heat, they probably ever would be *.

From theſe conſiderations, therefore, the greateſt caution appears to be neceſſary for preventing, as much as poſſible, the admiſſion of air to the internal ſurface of every collection of matter; and this, we may remark, is very eaſily and effectually done, by opening collections of this kind by means of a ſeton or cord, inſtead of having recourſe either to cauſtic or the ſcalpel.

This method of diſcharging the contents of tumors, by the introduction of a cord, is attended with every advantage of that by inciſion: it, moreover, empties the ſwellings, of whatever ſize they may be,

* *Vide* Sir John Pringle's and Mr Gaber's experiments on this ſubject. *Loc. cit.*

be, not ſuddenly, but very gradually; it effectually prevents a free admiſſion of air; it is not commonly attended with ſo much pain and inflammation; nor is the cicatrix occaſioned by it ever inconvenient, or unſeemly, as it often is after a large inciſion.

At one time it was the practice in the Royal Infirmary of this place, to open large abſceſſes, as well as thoſe of a ſmaller ſize, by extenſive inciſions: the conſequences were ſuch as I have related; many of the patients were thrown into ſuch obſtinate hectic fevers as they never recovered from; and others, though they did get better at the time, were commonly ſo much reduced, that they were apt to be ſeized with other diſorders, from which they ſeldom recovered.

This was the moſt frequent reſult of our treatment of large abſceſſes by inciſions; and ſimilar conſequences will ſtill be found to prevail where this practice is continued: but ſince the ſeton came to be generally uſed, few or no ſuch diſagreeable circumſtances

circumſtances have occurred. Many of the largeſt tumors have been opened in this manner; and when the patients are otherwiſe healthy, they very commonly do well; with this farther advantage, that a cure is frequently obtained in leſs than half the time uſually found neceſſary on a tumor being opened with a large inciſion.

The opening of abſceſſes by the introduction of a ſeton, has been mentioned by different authors, and in ſmall collections of matter has been frequently practiſed; but never ſo generally, I believe, as it has been here within theſe laſt thirty years, both in the hoſpital and in private. And in juſtice to Mr James Rae, late ſurgeon in this place, it muſt be acknowledged, that we are chiefly indebted for it to his recommendation, he having firſt propoſed the general uſe of ſetons in ſuch caſes, at the ſame time that he invented a ſet of inſtruments, by which they are eaſily inſerted in almoſt all abſceſſes, however deep-ſeated, and among whatever parts they may

run; and this too, without any riſk of wounding the large blood-veſſels, nerves, or contiguous tendons.

Several ſets of theſe inſtruments, for abſceſſes of different ſizes, are kept in the Infirmary here: they fulfil the intention, as I have obſerved, exceedingly well, and are a very ingenious contrivance. But as the curved director delineated in plate III. anſwers the purpoſe equally well, and is in itſelf fully more ſimple, it will for this reaſon be found more convenient. It is uſed in the following manner.

An opening ſufficiently large for the cord, being made with a lancet in the ſuperior part of the abſceſs, the director, threaded with a cord of candle-wick cotton, or ſoft ſilk, proportioned in thickneſs to the ſize of the tumor, is then to be introduced, and its point puſhed downwards till it is felt externally, exactly oppoſite to the moſt depending part of the ſwelling. The director being kept firm by an aſſiſtant, an inciſion is to be made with a ſcalpel upon its under extremity, of

of a length ſomewhat more conſiderable than the opening firſt made by the lancet: for when this is neglected, and when of courſe the under orifice is not larger than the upper, the matter is very apt to tranſude above; which always proves inconvenient to the patient, but which in this manner may be eaſily avoided. The director is now to be drawn downwards, with ſo much of the cord as to leave two or three inches hanging out at the lower orifice. In order to cauſe the cotton run eaſily on its firſt introduction, as likewiſe at the ſubſequent dreſſings, as much of it as is to be uſed at the time ſhould be well rubbed over with any emollient ointment.

In twenty-four hours or thereby from the inſertion of the cord, it ought to be drawn downwards, ſo as to admit of all that part of it being cut off which had been lodged in the abſceſs; and in this manner the ſame quantity ſhould be moved daily, as long as from circumſtances it may appear to be neceſſary.

A regular and flow difcharge of the matter is thus produced; the fides of the abfcefs are thereby allowed to contract gradually; and a flight inflammation being produced over the whole internal furface of the difeafed parts, they are thus made to unite much fooner than they otherwife would do. As the difcharge becomes lefs, fo the fize of the feton fhould alfo be gradually leffened; and it is eafily done, by withdrawing a thread of the cotton once in two or three days. At laft, when there is little more matter afforded than might be looked for from the fize of the cord, it may be altogether taken out; and gentle preffure being continued upon the parts affected by a roller for a few days longer, a pretty certain and lafting cure may generally be expected.

In the introduction of the feton it was exprefsly faid, that it fhould be made from above downwards; that is, by an opening made in the fuperior part of the abfcefs. The reafon for fuch a reftriction

is this, that when the firſt opening is made in the depending part of the ſwelling, a conſiderable quantity of matter immediately runs out, which, as it cauſes the ſides of the upper part of it to collapſe, renders it more difficult to introduce the director through the whole courſe of the abſceſs, than when done in the manner directed: when properly executed, the bottom as well as every other part of the tumor is kept diſtended to the laſt, very little of the matter eſcaping by the upper orifice. Being introduced in this way, too, the quantity of cord that ſtill remains to be uſed is kept clean and dry; which it cannot poſſibly be when inſerted from beneath.

To ſome theſe circumſtances may appear too trifling to deſerve ſuch particular notice; but too much can never be ſaid in rendering the account of a beneficial practice clear and evident.

All that has hitherto been ſaid of the uſe of ſetons in caſes of abſceſs from recent inflammation, applies with equal propriety

priety to tumors of long duration, when the matter contained in them is either of a purulent nature, or of a consistence not much thicker than pus. All encysted tumors of the thinner melicerous kind, are as succesfully treated in this manner, as recent abscesses: so that the practice is by no means confined to one kind of tumor only; and it may even probably be employed in others, for which it has not as yet been advised.

It answers particularly well in all collections of matter in glandular parts, where the admission of air is attended with even worse consequences than in other parts. Thus, when it is judged advisable to open scrophulous swellings, they commonly heal much sooner and more easily with the seton than by a large incision. Venereal buboes, too, when fully maturated, and when the teguments are not become too thin by being long overstretched, heal more readily by this management, than with any other.

From the practice answering so well in every case of abscess, it was at last, a good

many years ago, employed by the late Mr Rae, in the Infirmary here, in the hydrocele, or collection of water in the *tunica vaginalis teſtis;* and, a conſiderable time thereafter, the practice was adopted by the late Mr Pot. I muſt acknowledge, however, that from the ſeveral inſtances I have yet ſeen of its effects in this diſorder, I am inclined to think, that it ought not to be preferred to the ſimple inciſion. For, though I never knew an inſtance, when the operation was properly done, of its failing to produce a radical cure, yet the friction of the cord upon the body of the teſtis, to which, in this operation, it is immediately applied, generally occaſions a very high degree of inflammation; conſiderably more than is commonly produced by the ſimple inciſion.

This was my opinion in the year 1778, when the firſt edition of this book was publiſhed. Since that period, I have had no other reaſon to alter it, than to be more and more convinced that the treatment of hydrocele by ſeton, is productive of more pain

pain than any other method of cure now in uſe; while, at the ſame time, it is not more certain in its effects than the ſimple inciſion. And, accordingly, although I could not at that time ſpeak with preciſion of the merits of this operation, I am now ſatisfied that the cure by inciſion ought, in every inſtance, to be preferred.

But when, in ſuch caſes, it is reſolved to employ the ſeton, the method of introducing it, as we have directed for abſceſſes, with a curved director of a proper ſize, ſeems more ſimple, though in other reſpects perhaps not better, than the mode recommended by Mr Pott, which being with the help of a common trocar, appears to be neither ſafe nor eaſily performed. For inſtances have occurred, even with very able ſurgeons now living, where the body of the teſtis has been wounded by puncturing with that inſtrument.

SECTION IV.

Of Mortification.

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§ 1. *General Remarks on Gangrene.*

THE termination of inflammation, by Refolution and Suppuration, having been fully confidered, we come next in order to fpeak of Gangrene or Mortification.

The feveral appearances of Gangrene having been already enumerated, it is not now neceffary to mention them: Only, it may be remarked, that a thorough mortification, or the laft ftage of gangrene, is known only by the difeafed part becoming totally black, by its lofing all pain and fenfation, at the fame time that it ufually emits a confiderable fetor: at laft, too, a foftnefs

ſoftneſs or flaccidity takes place, together with an entire diſſolution of the different parts of which the organ is compoſed.

This does not indeed happen in every inſtance of Gangrene; for there are ſome inſtances of what is called Dry Gangrene, in which the parts continue totally mortified for a great length of time, without either turning flaccid, or running into diſſolution.

Such caſes, however, do not occur from inflammation. They commonly happen from the flow of blood to ſuch parts being ſtopped by compreſſion *viz.* by tumors, ligatures, or other ſimilar cauſes, obſtructing the principal arteries that uſed to ſupply them; which, when the ſtoppage of the circulation is complete, always occaſions a very ſlow mortification; and as the parts, in ſuch inſtances, are no longer ſupplied with freſh quantities of fluids, while a conſiderable exhalation muſt ſtill be going on, ſuch a degree of humidity cannot therefore occur, as in other caſes of gangrene.

Hence

Hence this ſpecies of the diſorder has, perhaps with propriety enough, been termed the Dry Gangrene.

Another variety of the diſeaſe is mentioned by authors, *viz.* the White Gangrene *; in which the parts ſuppoſed to be mortified do not turn black, but retain nearly their former colour. Whether this complaint, however, can with propriety be denominated Gangrene, may probably be doubted: but as it is chiefly that ſpecies of the diſorder which ſucceeds to inflammation, that we can now with propriety conſider, and in which no ſuch varieties are ever obſerved, we ſhall not at preſent carry our inquiry farther; and it is the leſs neceſſary, as nearly the whole courſe of the treatment, to be afterwards pointed out, applies, with almoſt equal propriety, to every variety of the diſeaſe.

Of all the inflammatory complaints to which the ſyſtem is liable, that variety of the diſorder termed Eryſipelas, is obſerved moſt frequently to terminate in gangrene; and

* Queſnay, Traité de la Gangrene, p. 337.

and whenever phlegmon is in any degree conjoined with eryſipelas, as ſometimes happens, it ſeems thereby to acquire a ſimilar tendency, not only in being more difficult to bring to ſuppuration than the true phlegmon, but by going on more frequently to the ſtate of mortification.

The beſt and ſureſt means of preventing mortification, is to endeavour to obtain either the reſolution or ſuppuration of the tumor, by a due application of the remedies we have already pointed out. But, in ſome caſes, the diſorder is far advanced, and gangrene already begun, before the ſurgeon's aſſiſtance is called in; and, in others, the inflammation runs ſo high, and proceeds ſo quickly, that gangrene takes place notwithſtanding all the remedies we can employ: In ſome inſtances, this happens ſo quickly, that the inflammation is ſcarcely diſcerned till mortification appears to commence.

§ 2.

§ 2. *Obſervations on Curbuncles as a Species of Gangrene.*

THIS rapid progreſs of inflammation occurs moſt frequently in caſes of Carbuncle, what by the French is termed Charbon; in which the inflammation proceeds ſo quickly to mortification, that in ſome caſes no evident tumor takes place, and the parts become black, and completely mortified, often in the courſe of twenty-four hours from the firſt attack.

The quick progreſs uſually made by Carbuncle, renders it the worſt and perhaps the moſt dangerous ſpecies of inflammation. Patients indeed often recover from external carbuncles, when not very extenſive, and not ſeated on any of the large blood-veſſels and nerves; but when they fix upon any of the viſcera, they muſt, probably in every inſtance, prove fatal, as no remedies with which we are acquainted can prevent their progreſs towards the laſt ſtage of mortification.

As

As carbuncles commonly appear without any evident caufe, they are in general moft probably owing to a fcorbutic or putrid ftate of the fluids; for, when putrefcency prevails in the fyftem, every inflammatory tumor that occurs, proceeds much more readily to the mortified ftate than inflammation in other circumftances ever does.

This opinion of carbuncles depending upon a putrefcent ftate of the fyftem, feems to be confirmed by their occurring moft frequently as a fymptom in peftilential difeafes; for, although they are fometimes met with even in this country, where the plague is now never known, yet the real carbuncle is by no means a common occurrence.

In fuch inftances we eafily account for gangrene, from the predifpofition in the fyftem to putrid diforders: But in what manner is it produced by inflammation in other cafes, and where no fuch difpofition can be fuppofed to take place? This we fhall proceed to inveftigate.

§ 3. *Of the Caufes of Gangrene.*

An increafed action in the veffels of affected parts, we have already endeavoured to eftablifh as the immediate or proximate caufe of inflammation; and the fame caufe will, in many inftances, account for the rife of mortification.

One evident effect of an increafed action in the veffels, in every cafe of inflammation, is a propulfion, into the fmaller capillaries, of a greater quantity of the more denfe parts of the blood than naturally they were meant to tranfmit. When this is not confiderable, a due circulation is frequently in a fhort time reftored, and no bad confequences enfue, nay, even when an actual extravafation of the ferous part of the blood into the cellular membrane has in fome degree taken place, the fluid is often reabforbed, and a cure is thus obtained by refolution. But when fuch extravafation produced by a farther increafe of this undue action of the veffels, has taken place to a ftill greater degree, fuppuration is then the moft frequent confequence.

When,

When, again, a ſtrong exciting cauſe is applied to a conſtitution already predisſpoſed to inflammation; as a lacerated wound, for inſtance, in a young healthy man; the violent irritation, and conſequent increaſed action of the veſſels that enſues, occaſions the red particles of the blood to be likewiſe poured forth together with the ſerum. In this manner a collection of an extravaſated fluid is produced, and the great degree of preternatural heat kept up by the diſorder, very readily excites in it ſome degree of fermentation; which, from the nature of the fluid it has to act upon, not being able to produce purulent matter *, and the craſſamentum of blood being particularly liable to run into the putrid fermentation †, mortification,

* Mr Gaber, when ſpeaking of his experiments upon the craſſamentum of blood, ſays, that he could never obtain genuine pus from it; and farther adds, "Vero ſimilius ergo *ſanguinem* cæteris puris principiis admixtum, ipſum magis *fœtidum* et deterius reddere," &c. *Loco citato*, p. 87.

† For ſome animal ſubſtances, ſuch as urine, the bile, and the craſſamentum of blood, *ſoon* putrefy. Sir John Pringle's Experiments, Appendix, p. vi.

mortification, which we may here consider as the ultimate ſtage of putrefaction, comes in courſe to be produced.

Mortification being, in this manner, excited, the progreſs which it afterwards makes, does not appear difficult to explain. The putreſcent particles of the tumor, by inſinuating into the cellular membrane of the contiguous parts, as in this manner they extend the contagion, ſo they ſoon bring theſe likewiſe to ſuffer. In this way, the mortification continues to advance; till meeting with a part, perhaps, naturally more irritable than the others, or which by this time has been rendered ſo by the different remedies to be pointed out, a certain degree of new inflammation comes to be eaſily induced, in conſequence of the ſtimulus which putrid particles muſt always occaſion: This, as it renders the parts more firm and compact, makes them leſs eaſily penetrable by the putreſcent contagion; and a ſuppuration of courſe enſuing as a conſequence of the preceding inflammation, a complete

ſeparation of the diſeaſed from the ſound parts, is thereby, in general, ſoon accompliſhed.

At leaſt, that ſuch an inflammation, with a conſequent ſuppuration, does, in caſes of gangrene, always happen before the diſeaſed parts ſeparate from the ſound, is a fact well known to every practitioner; and, that the cauſe aſſigned above for theſe appearances is the true one, is rendered highly probable, by the different circumſtances I have mentioned.

Thus the local ſymptoms of gangrene appear to be pretty clearly explained; and the ſinking of the pulſe, which, in extenſive mortification, always occurs, and which is by much the moſt remarkable change that takes place in the ſyſtem, is a very natural conſequence of that debility, which ſeems to be a conſtant and neceſſary attendant on a putreſcent ſtate of the fluids, from whatever cauſe it may have ariſen; a circumſtance we have particularly demonſtrated in putrid fever, and in ſcurvy, where a languid pulſe and ge-

neral debility are always considered as the most characteristic symptoms.

§ 4. *Of the Prognosis in Gangrene.*

In every case of gangrene, the prognosis should at first be doubtful; for even in the slightest affections of this nature, the system, from the contagion it receives by the absorption of putrid matter, is, in some instances, so much injured, that the patients are suddenly carried off, without appearing previously to have been in any imminent danger.

In such cases, however, as succeed to inflammation from an external cause, where the gangrene is neither very deep nor extensive, and where it does not seem to spread, the prognostic ought to be much more favourable than in those arising suddenly from an internal cause, where the mortification runs deep, and more especially when it is still continuing to advance; in which circumstance the greatest danger is always to be apprehended.

Indeed, no person whatever, with any considerable mortification, even from an external cause, can be said to be free from risk, till the diseased parts are separated, and entirely cast off from the sound; the poison of putrid miasmata being of such a penetrating and destructive nature, that many instances have occurred of patients being quickly carried off, seemingly from this circumstance alone, long after the progress of the mortification had ceased. In such cases we presume, that the putrescent miasmata prove destructive, chiefly by their deleterious influence on the nervous system. In long continued cases of mortification, the general mass of fluids may sometimes suffer from the absorption of putrid effluvia; but as patients, labouring under mortification, frequently die suddenly, and before any putrescency has appeared in the system at large, we conclude that this most probably happens from some effect produced either upon the nerves themselves, or on the sensorium, from whence they originate. But in whatever

manner the putrid fomes of a mortified ſpot may operate, their influence is frequently ſo pernicious as to warrant the concluſion I wiſh to eſtabliſh, namely, that no perſon labouring under mortification, can be ſaid to be free from danger till all the diſeaſed parts are removed.

§ 5. *Of the neceſſary Remedies in Gangrene.*

In the cure of Gangrene, when no blood-letting or other evacuation has been preſcribed during the preceding ſtate of inflammation, if the pulſe continues quick, full, or hard; and eſpecially if the patient is young and plethoric; it then becomes neceſſary, even although mortification may have commenced, to empty the veſſels by one general blood-letting; which, by moderating the fever, proves often the ſureſt means of preventing the progreſs of the diſorder: And, in this view, blood-letting, in ſuch caſes, may, in reality, be conſidered as an antiſeptic; and it often, indeed, in this particular ſtate of

of mortification, proves more uſeful than any other remedy we employ.

In the ſame view that we recommend blood-letting, gentle laxatives, and a free uſe of acidulated cooling drink, become neceſſary. But as, in the farther progreſs and continuance of mortification, the patient is very apt to ſink, and the pulſe to turn languid, every evacuation, eſpecially of blood, ſhould be directed with caution, and never carried farther than may ſeem neceſſary for rendering ſuch ſymptoms moderate as at the time appear to be too violent.

When, again, as is moſt frequently the caſe when gangrene has made much progreſs, the patient is much reduced, either by ſevere evacuations, or merely by the effects of the diſorder; when the pulſe is low, and the other ſymptoms of fever not conſiderable; in theſe circumſtances a very contrary treatment becomes neceſſary: the principal indication now being, to prevent the ſyſtem from ſinking too much, by a proper uſe of cordials, and e-

ſpecially by thoſe of the tonic kind; while, by the ſame means, we enable it to free itſelf from, or to caſt off, the mortified parts. For, as we have already obſerved, the ſeparation of gangrenous from healthy ſound parts, being always the effect of inflammation, it ſhould be our chief care to aſſiſt nature as much as poſſible, in exciting in the ſyſtem, by every proper means, that diſpoſition which, from experience, we know to be moſt favourable for the production of inflammation; which, when ſpeaking of the general prediſpoſing cauſes of inflammatory complaints, we have endeavoured to ſhow, is a full plethoric ſtate of the veſſels, and which at the ſame time is generally conjoined with a more invigorated tone of the veſſels themſelves.

It may, perhaps, be imagined, that this indication proves, in ſome meaſure, contradictory to what we have juſt had occaſion to mention of the propriety of bloodletting in ſome caſes of gangrene; but when duly conſidered, it will not appear to be ſo. For we well know, that, in every

ry diſeaſe to which the ſyſtem is liable, an over-doſe of the moſt effectual remedy will often prove juſt as detrimental as a medicine of the moſt oppoſite tendency: and, in the ſame manner, though a certain degree of inflammation is, perhaps, neceſſary for the cure of gangrene; yet, in a very high degree, it becomes always hurtful.

With a view to fulfil the intention of this indication, a good nouriſhing diet becomes neceſſary, with ſuch a proportion of generous wine as the ſtrength of the patient, and ſymptoms of the diſeaſe, may ſeem to require.

By a due attention to regimen, particularly by a proper allowance of wine, much more real advantage is commonly obtained, than we ever experience from the whole tribe of ſtimulating warm cordials. When, however, the patient is languid and much reduced, ſome of theſe, ſuch as the volatile alkali, and confectio cardiaca, may, at the ſame time, and in ſuch quantities, be preſcribed, as the im-

mediate ſituation of the patient may ſeem to render neceſſary.

But of all the medicines hitherto uſed in mortification, none proves ſo certainly efficacious as the Cortex Peruvianus, which has often a very evident and powerful influence in putting a ſtop to the diſorder. As it is a very powerful tonic, it may probably act by invigorating the general ſyſtem; and thus, by rendering it more ſuſceptible of that inflammatory tendency, which we have ſhown to be ſo neceſſary for effecting a ſeparation of mortified parts, it may in this manner enable it to throw them off. It may likewiſe, perhaps, in ſome inſtances, act as an antiſeptic, merely by correcting putrefaction; but in order to have ſuch influence in this manner, it ought, I imagine, to be locally applied to the diſeaſed parts.

But in whatever manner the bark may operate, it can in no caſe of mortification be, with propriety, omitted, excepting in the firſt ſtage of the diſeaſe, while ſeveral of the inflammatory ſymptoms yet remain

remain violent: As soon as these are abated, it may always, both with safety and advantage, be employed.

The best rule for the quantity of bark to be exhibited in gangrene, is that the doses should be large, and as frequently repeated as the state of the stomach will permit. It proves often, indeed, a great inconvenience in gangrene, that the stomach cannot contain a sufficient quantity of the bark in substance, which is always the best mode of using it; but particularly in gangrene, where none of the finer preparations of bark are ever to be trusted.

Of all the forms employed for exhibiting bark in substance, I have generally found it sit easiest on the stomach when conjoined with one or other of the spirituous waters; and to the use of which, in such cases of gangrene as require bark to be given, there can never be any objection. The following formula is far from being disagreeable, and I have known it answer

anſwer with patients whoſe ſtomachs rejected every other.

℞. Aq. alexiter. ſimp.
cinnamon. fort. *aa* unc. iii.
tinctur. aromat. unc. ii.
Pulv. cort. Peruv. ſubtil. unc. ſs. miſce; coch. ii. omni ſemihora ſumendis, agitata phiala.

In this manner a drachm of the bark is taken every hour, which frequently in leſs than twenty-four hours, has ſome influence on the appearance of the diſeaſe. Much depends upon the medicine being in fine powder, as patients often bear conſiderable quantities in that ſtate, when they reject even very ſmall doſes of a coarſe powder.

As a ſpecies of bark has, of late years, been employed, of a more deep red colour than the kind in ordinary uſe, I think it right to mention the reſult of my own experience of it. I cannot pretend to form any judgment of the effects of this remedy in the cure of intermittents, as, in Edinburgh and its environs, agues are ſeldom

ſeldom met with. But, ſo far as I have yet ſeen, its influence, in caſes of gangrene, and in correcting the thin fetid diſcharge of putrid ulcers, is inferior to that of the beſt ordinary bark of a brown or cinnamon colour. One very remarkable inſtance of this it may not be improper to mention: A gentleman, for ſeveral years, had laboured under a ſinuous ulcer, the diſcharge of which, once in two or three months, always became thin, putrid, and very acrid. The influence of common bark, in correcting this, was ſo remarkable, that a few doſes commonly had a conſiderable effect in rendering the matter thick, and leſs offenſive. From the taſte, and other ſenſible qualities of the red bark, being ſtronger than thoſe of the ordinary kind, I was at firſt inclined to think favourably of it; and among others I preſcribed it to this patient. But although he continued for ſeveral days to take it in the ſame doſes he had always uſed of the other, he did not experience any advantage from it; while, on the other

ther hand, on the common bark being again employed, the matter, from being thin and fetid, was quickly converted into pus of a proper confiftence.

One trial, however, is by no means fufficient for enabling us to form a juft opinion of any medicine: And accordingly I was refolved to put it to the fame teft in future occurrences of a fimilar nature. It has now been three times tried in the fame manner, and the refult has been always the fame. The red bark has never produced any change on the nature of the difcharge, while the influence of the other has been uniformly the fame. Indeed, our patient is now fo much convinced of the inefficacy of the former, that it is with reluctance he is induced to take it; although, at firft, his expectations from it were raifed very high, not only from the opinion I had endeavoured to give of it, but from the high panegyrics beftowed on it by others.

This is the moft remarkable cafe I have met with for comparing the effects

of

of the different kinds of bark: but I have likewiſe ſeen the red bark fail in other caſes, where the common kind of it proved evidently uſeful; ſo that, although I cannot with certainty ſay that the red bark will never prove uſeful in caſes of mortification, and in ſuch ulcers as we have deſcribed, yet from the reſult of all the experience I have yet had of it, I am inclined to conſider it as of an inferior nature to the other. Farther obſervation, however, is neceſſary to determine a matter of ſuch importance.

Together with bark, the vitriolic acid is frequently employed with advantage; and the beſt form of uſing it is, by acidulating the patient's drink with elixir of vitriol.

Theſe are almoſt the only internal remedies to be depended on in caſe of gangrene. Many others, indeed, have been recommended; but all the advantages to be obtained from any of them, may be procured with more certainty from ſome or all of thoſe I have enumerated.

A variety of external applications are pointed out by authors, particularly thofe of the antifeptic kind; fuch as, all the warm gums and balfams, ardent fpirits, and even alcohol: and to admit of their nearer application to the found parts with a view to the prefervation of thefe from putrefaction, deep fcarifications through the difeafed and into the found parts have been generally recommended.

But although fuch articles may be of ufe in preferving *dead* animal-fubftances from corruption; yet that they will prove equally ferviceable when applied to living bodies, is probably much to be doubted: There is even caufe to imagine, by the ftrong irritation which they excite when applied to a living fibre, that, in fuch cafes as the prefent, they may rather do harm; it being only, as I have obferved already, a very flight degree of inflammation that is required. The incifions, too, when carried into the found parts, with a view to facilitate the operation of fuch remedies, may likewife do

harm;

harm; not only from the risk of wounding the blood-vessels, nerves, and tendons, that lie in the way; but also, by allowing a free and farther entrance of the putrescent matter into the parts not yet affected: And unless they are carried so deep as freely to reach the sound parts, applications of the antiseptic kind can never have any effect in answering the purpose for which they are intended. For these reasons, and from never having observed any advantages to accrue from scarifications, I have long thought that they ought to be laid aside *.

Theriac

* Although I was convinced, from experience, of what I have advanced against the use of scarifications, as well as of the impropriety and inefficacy of very warm stimulating applications in mortification; it was not without diffidence that I first ventured to assert it, the opinion at that time being in a great measure new. I am now happy to find, however, in a late publication, the same practice recommended from the best authority. *Vide* Chirurgical Observations by Percival Pot, F. R. S. &c.

In the same publication is given a particular description of a species of mortification incident to the toes and feet, in which Peruvian bark has little or no influence, and in which opium, given in large doses, frequently repeated, proves a very effectual remedy.

Theriac was, in former times, and ftill is, with fome practitioners, a very common application in gangrene; but from any opportunities I have had of feeing it ufed, I cannot fay that it ever feemed to produce any obvious advantage.

All the advantages we derive from the great variety of applications ufually pointed out for gangrene, are obtained with more eafe, and generally with more certainty, from the ufe of any ftimulating embrocation; which, by exciting a flight irritation upon the furface, and efpecially when affifted by a free ufe of bark, at laft commonly excites the wifhed for degree of inflammation. With this view, I have frequently employed a weak folution of fal ammoniac in vinegar and water, and often with advantage: a drachm of the falt to two ounces of vinegar, and fix of water, form a mixture of a proper ftrength for every purpofe of this kind; but the degree of ftimulus can be eafily either increafed or diminifhed, by ufing a larger or fmaller proportion of the falt.

Although

Although, for the reasons I have already advanced, incisions may not, in general, be proper: yet, whenever the mortification runs deep, scarifications should be made into the diseased parts, with a view to remove a portion of them, which, by taking off a considerable load of putrid dead matter, not only lessens the fetor, which, in such cases, is always considerable, but often renders it more easy for the sound parts to throw off the remainder: When incisions, however, are employed for this purpose, care should be taken that they be not carried so deep as to injure the sound parts.

When, by the means we have recommended, or by the effects of a natural exertion of the system, a slight inflammation begins to arise between the diseased and sound parts, we may, in general, with some certainty, expect that, in due time, an entire separation will take place: and, when a full suppuration has fairly commenced, there will be still less cause to doubt of a cure being to be obtained.

On the mortified parts being removed, the remaining ſore being in the ſtate of a ſimple purulent ulcer, muſt be treated as ſores of this deſcription uſually are, with mild eaſy dreſſings; at the ſame time, that the ſtrength of the patient ſhould be ſupported by the continuance of nouriſhing diet, the bark, and ſuch quantities of wine as may be neceſſary.

In this manner, all ulcers produced by gangrene, may be healed, where the diſeaſe has not been very extenſive; but where mortification, ſeated on any of the extremities, has penetrated deep, ſo as to reach the bones, and where the ſurrounding ſoft parts are deſtroyed, amputation of the member becomes our only reſource: This meaſure, however, ſhould never be adviſed, till a full and complete ſeparation of the mortified parts has taken place; and it ought, in every caſe of gangrene, to be held as an eſtabliſhed maxim, never to amputate a member till a full ſtop has been put to the diſeaſe, or till the mortified parts have been completely ſepara-

ted from the ſound: For, although the parts immediately contiguous to thoſe *evidently* diſeaſed, may outwardly appear to be ſound, yet there can never be any certainty of thoſe, even directly beneath, remaining ſo till a ſeparation occurs; ſo that, till a ſeparation has taken place, the diſeaſe will ſtill be apt to return upon the remaining ſtump.

It muſt be obſerved, however, that as ſoon as an entire ſeparation of the gangrene is perceived, no time ſhould be loſt in putting the operation in practice; for, as long as any of the corrupted parts remain in contact with the ſound, the ſyſtem muſt ſtill be ſuffering conſiderably, by the conſtant abſorption of putreſcent particles, that ſo long will ſtill be going on.

CHAPTER II.

Of Tumors.

SECTION I.

Of Tumors in General.

EVERY præternatural enlargement, in whatever part of the body it is ſeated, may be termed a Tumor.

Tumors daily occur in one form or another: They are often followed with important conſequences, and frequently give much embarraſſment both to patients and ſurgeons: For theſe reaſons they merit particular attention.

We

We meet with much variety in the general appearances of tumors, as well as in the method of treatment beſt ſuited for their removal: But ſuch varieties only ſhould be mentioned in a work of this kind, as require ſome peculiarity in the method of cure.

Tumors may with propriety be divided into two general claſſes: Into thoſe that are of an acute or inflammatory nature; and ſuch as are chronic or indolent. Authors have for the moſt part diſtinguiſhed them into ſuch as are ſaid to be of a warm nature, and thoſe which they ſuppoſe to be cold, from their being deſtitute of pain and redneſs, ſymptoms which we commonly obſerve to accompany heat. But the terms we have mentioned of Acute or Inflammatory, and Chronic or Indolent, are more ſcientific; at the ſame time that they are more expreſſive of the real nature of the different affections: For it will be found to hold perhaps univerſally, that tumors are acute or indolent, that is, that they are rapid or ſlow in their progreſs,

nearly in proportion to the degree of inflammation with which they are attended. I mean therefore to rank in the firſt claſs of tumors, all ſuch as from their commencement are accompanied with inflammation; and in the ſecond, all thoſe which are not evidently accompanied with this ſymptom.

It will unavoidably happen, however, that ſome tumors will be mentioned under one claſs, which, during ſome part of their progreſs, may appear to belong to the other: Thus, a tumor beginning from inflammation, may terminate in a ſtate of perfect indolence; while others, which at firſt were evidently chronic or indolent, may at laſt become highly inflammatory. We ſhall endeavour, however, to characterize them by thoſe ſymptoms which appear moſt obviouſly at their commencement; a mode of diſtinction which appears to be the moſt accurate; for it is not what a tumor may eventually become, but what it actually is on its firſt appearance, that can admit of any deſcription:

And

And although all the variety of tumors which fall within our obſervation, or of which I mean to treat, are enumerated in the following claſſification, many of them will fall with more propriety to be conſidered in other parts of the work. Thus, the conſideration of aneuriſm and thrombus ſucceeds to blood-letting, as being moſt frequently induced by that operation. Collections of matter in the Antrum Maxillare, gum, boils, and other affections of the mouth, fall to be noticed immediately after toothach; while we have already finiſhed the conſideration of abſceſs and mortification, as the conſequences of phlegmon.

Class I.

Acute or Inflammatory Tumors.

Phlegmon, with its conſequences, abſceſs and mortification.

Eryſipelas.

 Ophthalmia.

Ophthalmia.
Inflammation of the ear.
Angina, or inflammation of the throat.
Inflammation and abſceſs of the liver.
of the breaſts of women.
of the teſtes.
of the anus and perinæum.
Venereal buboes.
Lumbar abſceſſes.
Paronychia or whitloe.
Chilblains.
Sprains and contuſions.

CLASS II.

Chronic or indolent Tumors.

Encyſted tumors, uſually ſo termed.
Ganglions.
Swellings of the burſæ mucoſæ.
Concretions and preternatural excreſcences within the capſular ligaments of joints.

Aneuriſms.

Aneurifms.

The true, the falfe, and varicofe aneurifms.

Varicofe veins.

Hemorrhoidal fwellings.

Hydropic fwellings.

anafarca or œdema.

hydrocephalus.

hydrops pectoris, and hydrops pericardii.

afcites.

dropfy of the ovaria.

hydrocele.

fpina bifida.

Swellings in the fublingual glands.

Tumors containing air.

General emphyfema produced by air efcaping from the lungs into the cellular fubftance, as fometimes happens from the fpiculæ of fractured ribs penetrating the fubftance of the lungs.

Local emphyfematous tumors produced by putrefaction in a particular part. This is a rare occurrence; but cafes of it are recorded by different authors.

Tympanitis.

Tympanitis.

Tumors formed by the diſplacement of particular parts.

Herniæ:

- of the brain.
- inguinal and ſcrotal.
- congenital.
- crural.
- umbilical.
- ventral.
- at the foramen ovale.
- in the perinæum.
- of the alimentary canal and meſentery.
- of the omentum.
- of the liver, ſpleen, and other abdominal viſcera.
- of the bladder.
- of the inteſtines into the vagina.

Protruſion of the eye-ball.

Prolapſus uteri.

Prolapſus ani.

Tumors formed by the diſplacement of bones in caſes of diſlocation.

Scrophulous tumors.

White

White ſwellings of the joints.

Bronchocele.

Scarcomatous tumors.

- Sarcocele.
- Schirrus.
- Cancer.
- Polypous excreſcences in the noſe and throat.
- Polypi in the ear.
  - in the uterus.
- Condylomatous tumors in the anus.
- Excreſcences in the urethra.
- Nævi materni.
- Warts.
- Corns.

Tumors from affections of the bones.

- Simple exoſtoſes.
- Venereal nodes.
- Spina ventoſa.

SECTION II.

Of Acute or Inflammatory Tumors.

THE general theory and management of inflammation have been fully confidered in the preceding chapter. We muft therefore refer for this part of our fubject to what was then faid upon it: And in confidering thofe varieties of tumors in which inflammation takes place, fuch circumftances only will be noticed as from peculiarity of fituation, or fome other caufe, require a particular mode of treatment.

§ 1. *Of Eryfipelas.*

ERYSIPELAS as being a variety of inflammation, has in fome inftances been miftaken for phlegmon: The two affections, however,

however, may for the moſt part be eaſily diſtinguſhed: In phlegmon, the inflammation is circumſcribed and elevated. In general, it is ſeated in the cellular ſubſtance; and any effuſion which takes place is for the moſt part converted into purulent matter: But in eryſipelas, the tumor is diffuſed, and not much elevated; it ſeldom proceeds deeper than the ſkin; any effuſion with which it is attended is commonly thin and acrid, and not convertible into pus, and the ſkin acquires a kind of copper-colour inſtead of that crimſon-red which occurs in the firſt ſtage of phlegmon.

By experience we know, that ſores proceeding from eryſipelas are difficult to cure: It ſhould therefore be our firſt object to endeavour to prevent that effuſion by which theſe ſores are produced. Some indeed allege, that this practice muſt be attended with riſk, as eryſipelas for the moſt part appears to proceed from an affection of the conſtitution; and hence we are adviſed rather to encourage the diſcharge

charge of that matter which nature in ſuch caſes ſeems inclined to depoſit. This obſervation, however, is not confirmed by experience, for we find that the diſcuſſion of eryſipelatous affections may be attempted with the ſame freedom and ſafety as inflammation of any other kind.

A common prejudice prevails againſt the uſe of unctuous and other moiſt applications in eryſipelas; and fine flour, ſtarch, or hair-powder, are almoſt the only remedies employed externally. Theſe are uſed with a view to abſorb the acrid matter, which eryſipelatous inflammation often throws out in the form of puſtules, and which unctuous and moiſt applications are rather ſuppoſed to encourage. But to me it appears that they prove more uſeful in preventing the effuſion or formation of that matter, than in abſorbing it afterwards. By ſoothing or allaying that uneaſy ſenſation which uſually accompanies eryſipelas, and which they often do very effectually, they neceſſarily tend to leſſen that preternatural ac-

tion

tion of the affected veſſels, which in every caſe of inflammation we conſider as the cauſe of the ſubſequent effuſion; and as they uſually prove more pleaſant in every reſpect than moiſt applications, they ſhould therefore in the firſt ſtages of the diſeaſe be preferred. It happens indeed in ſome caſes, that they have little or perhaps no effect in procuring relief. In ſuch inſtances, I have ſometimes found, that by keeping the inflamed part expoſed to the air, and wetting it every now and then with a feather ſoaked in a weak ſolution of ſaccharum Saturni, immediate eaſe has been procured, and no diſadvantage has afterwards occurred from it. In general, however, the dry farinaceous powders anſwer better.

Almoſt an univerſal prejudice has prevailed againſt blood-letting and other evacuations in eryſipelas. And as it is commonly ſuppoſed to be attended with ſome degree of putreſcency, inſtead of evacuations, bark, wine, and warm ſtimulating cordials, have been recommended.

ed. It appears, however, that the ideas of practitioners upon this point have not been founded on obſervation: For it is now known, that blood may be diſcharged with the ſame ſafety in eryſipelas as in other caſes of inflammation; and by doing ſo, and adhering in every reſpect to an antiphlogiſtic regimen, we have it often in our power to prevent the diſeaſe from terminating in thoſe effuſions which we have mentioned, and which at all times we ſhould endeavour to do.

It is proper, however, to remark, that local blood-letting, which in other varieties of inflammation proves often uſeful, is not here admiſſible: For the orifices by which the blood is drawn off are apt to degenerate into thoſe troubleſome ulcers, which eryſipelas when it terminates in effuſion, is very apt to produce.

By one or more general blood-lettings, according to the ſtrength of the patient; by the uſe of gentle laxatives, mild ſudorifics, and a cooling diet; and by fre-

quently dusting the part affected with one or other of the powders I have mentioned, almost every erysipelatous tumor may be discussed: But when effusion is found to have occurred in any considerable quantity, it should be discharged immediately by a small opening in the most depending part of it. In this state of the disease, emollient cataplasms are commonly applied with a view to bring the contents of the swelling to suppuration. This, however, proves always pernicious: For the effusion being of a nature which cannot be converted into pus, poultices can never be of the same use as in cases of phlegmon; and as it is commonly sharp and acrid, when allowed to remain, it is apt to do mischief by corroding the skin and other contiguous parts. The best applications in this state of the disease, are the saturnine ointments, such as Goulard's cerate, or the common wax-ointment, with a small proportion of Saccaharum Saturni.

§ 2. *Of Inflammation of the Ear.*

The paſſage, as well as the bottom of the ear, is entirely membranous; conſequently the inflammation which attacks it proves always painful: For we know that inflammation of membranous parts gives more pain than that of parts of a looſer texture; as the blood veſſels in the former do not yield ſo readily as thoſe of the latter, to the diſtention with which inflammation is accompanied.

The remedies to be employed in inflammatory affections of the ear, ſhould be regulated by the ſtage of the diſeaſe. When the inflammation has ſubſiſted ſo long as to give reaſon to ſuſpect that it will terminate in ſuppuration, which it is apt to do quickly, emollient applications prove moſt uſeful: The ear ſhould be frequently fomented with warm emollient ſteams; and it often proves ſerviceable to cover the affected ſide of the head with large

emollient poultices. But in the commencement of the affection, we ſhould in general attempt to prevent ſuppuration: For it is often difficult to obviate the effects of it when matter is once formed in the ear; and a long continued diſcharge is frequently productive of deafneſs. With this view, nothing proves in general ſo effectual as the application of a ſmall bliſter behind the ear: And by pouring a few drops of laudanum into the paſſage, or of compound ſpirit of lavender mixed with a ſmall proportion of oil, we very commonly have it in our power to remove or abate the pain; and the irritation being in this manner removed, the riſk of ſuppuration is thereby leſſened.

Our endeavours, however, for this purpoſe will often prove abortive: In which event, and when it is evident that matter is formed, we ſhould endeavour to bring it off as freely as poſſible, by bathing the ear in warm water, and even by injecting a little warm water into it. By theſe

means we may often put a ſtop to the diſcharge: But when it ſtill continues to flow, aſtringent injections, of lime water, or mild ſaturnine ſolutions, ſhould be employed; which ſeldom fail when the diſeaſe is ſolely confined to the ſoft parts of the ear. When the bones of the ear are affected, which in general may be known by the matter having a very offenſive ſmell, and being of a black or dark brown colour, all that art can do, is to keep the paſſage clear by the uſe of injections. The cure of deafneſs is in ſuch caſes not to be looked for, and we truſt to nature alone for throwing out the diſeaſed bones.

§ 3. *Of Angina.*

Every inflammatory affection of the throat is termed Angina, or Squinzy.

As abſceſſes in theſe parts prove always troubleſome, and in ſome caſes dangerous, we ſhould endeavour to cure every inflammation with which they are attacked by reſolution.

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With this view, one or more general blood-lettings ſhould be preſcribed, according to the ſtrength of the patient. Smart purgatives prove particularly uſeful; and ſome advantage is often derived from diaphoretics.

None of theſe remedies, however, can be depended on with ſuch certainty as the local diſcharge of blood from the part affected, and the application of a bliſter to the contiguous parts. In Plate LVII. figs. 1. and 3. inſtruments are delineated for the purpoſe of drawing blood from the throat by means of ſcarifications; and when employed with freedom on the firſt appearance of inflammation, ſuppuration may very commonly be prevented. Fomenting the throat with ſteams of warm vinegar proves ſometimes uſeful; and conſiderable advantage has in different inſtances been derived from aſtringent gargles, of infuſions of oak-bark, of red roſe leaves with a proportion of alum or vitriolic acid, and of Saccharum Saturni diſſolved in water. A general prejudiçe prevails a-

gainſt the uſe of ſaturnine applications in the form of gargles, from their being ſuppoſed to be of a poiſonous nature. But although I have often uſed them, I never knew an inſtance of their doing harm; and they have frequently proved highly ſerviceable. In ſmall quantities I believe they might be ſwallowed with ſafety; but we all know that gargles may be employed without any part of the liquor being allowed to go over.

It will often happen, however, that theſe and all other remedies will fail, either from their being applied too late, or from the inflammation being very violent. When ſuppuration is evidently to take place, it ſhould be promoted by the external application of warm poultices to the throat, and by the patient being made to inſpire the warm ſteams of milk, or of any emollient decoction, by means of the machine delineated in Plate LVII. fig. 2. When matter is fully formed, it ſhould be diſcharged by an opening made into the abſceſs with one of the inſtruments mentioned above for ſcarifying the throat.

§ 4.

§ 4. *Of Inflammation and Abscess of the Liver.*

The substance of the liver being soft and of a yielding nature, we would not *a priori* imagine that it should be liable to inflame. We find, however, in warm climates, particularly in the East Indies, that this viscus becomes more frequently inflamed than perhaps any other of the body; probably from the bile in these climates being apt to become so acrid as to excite irritation in the parts to which it is applied. In some cases too, the liver inflames from external violence.

Inflammation of the liver is attended with a dull uneasy sensation over all the contiguous parts, with cholic pains and sickness at stomach; the patient is liable to frequent cold and hot fits; and for the most part, the colour of his skin, as well as his urine, is tinged yellow.

When suppuration takes place, and especially when the abscess is large, the patient complains of pain extending up the right side to the top of the shoulder.

In ſome caſes this ſymptom occurs even in the inflammatory ſtate of the diſorder; but it happens more frequently after the formation of matter, probably from the weight of the abſceſs acting upon the diaphragm and pleura, with which the liver is connected. The region of the liver becomes daily more tenſe; and if the convex part of it is chiefly affected, a ſoftneſs, and even a fluctuation of matter is often diſcovered through the teguments of the abdomen.

In the commencement of this affection, theſe remedies prove moſt ſucceſsful, which prove moſt uſeful in other caſes of local inflammation. Blood-letting ſhould be immediately preſcribed; the quantity to be determined by the ſtrength of the patient: But inſtead of taking it from a vein, it ſhould be drawn off by cupping and ſcarifying the part affected. When the ſcarifications are made of a ſufficient depth, almoſt any quantity of blood may be got in this manner; and no remedy with which we are acquainted proves ſo effectual in removing

removing the inflammation. Bliſtering the pained part is alſo frequently of ſervice; the bowels ſhould be kept moderately open with mild laxatives; and a gentle perſpiration ſhould be encouraged over the whole body.

In general, this treatment will prove ſucceſsful, when employed early in the diſeaſe; but when the ſymptoms do not ſoon yield, mercurials ſhould be adviſed without any farther delay: For in the removal of inflammatory affections of the liver, nothing has hitherto proved ſo effectual as mercury in one form or another. The common mercurial pill of the Edinburgh Diſpenſatory anſwers as well as any other; and it ſeems to act with more certainty when conjoined with ſmall doſes of opium. Frictions with mercurial ointment upon the part affected, are ſometimes employed with advantage: But whatever form of the medicine is uſed, it ſhould be quickly carried ſo far as to affect the mouth, which ſhould be kept moderately ſore for ſeveral weeks, unleſs the

the diſeaſe ſubſides immediately; in which caſe a ſhorter courſe will be ſufficient.

As it is of importance in all caſes of this kind to give a free diſcharge to the bile, if the patient does not otherwiſe get regular and eaſy ſtools, he ſhould, during the mercurial courſe, have a gentle ſaline purgative every third or fourth day, by which the diſcuſſion of the inflammation is often much promoted.

Suppuration, however, will often take place, notwithſtanding all that can be done to prevent it; and when found to have happened, an inciſion ſhould be made into the abſceſs to diſcharge the matter. When the abſceſs is ſeated on the convex or prominent part of the liver, and the quantity of matter contained in it conſiderable, we readily diſcover it by the touch; and in this caſe there is no room to heſitate. But even where we have not this for our direction, a little attention will often enable us to diſcover with certainty whether ſuppuration has occurred or not. If along with pain in the right ſhoulder

ſhoulder and neck, it is obſerved that the region of the liver is more bulky than it was before, and that the correſponding teguments are become ſoft and œdematous; and eſpecially if the patient complains of frequent ſhivering fits, a ſymptom which very conſtantly accompanies internal ſuppuration; we may conclude with much certainty that matter is formed.

Wherever an abſceſs is ſeated, the matter ſhould be diſcharged, perhaps as ſoon as it is known that complete maturation has taken place. But abſceſſes in any of the larger cavities, eſpecially when they lie ſo deep as the liver or any of the viſcera, ſhould be opened even before there is reaſon to ſuppoſe that all the effuſed fluids are ſo completely converted into pus as we might otherwiſe wiſh them to be. Indeed this ſhould be conſidered as an eſtabliſhed maxim in practice; for the chance of theſe collections burſting inwardly is much greater than of their opening outwardly, where the teguments which cover them are thick and ſtrong, when compared

compared with the peritonæum, the only membrane lying between them and the inteſtines. Abſceſſes of the liver have been known to burſt through the diaphragm, ſo as to be emptied into the thorax: In a few caſes the matter has been carried into the duodenum by the common paſſage of the bile; and ſometimes, by the great arch of the colon adhering to the liver, a communication has been formed between them; by which the matter of abſceſſes in this ſituation has been very completely evacuated: But for the moſt part, when not diſcharged by an external opening, the abſceſs burſts into the abdomen.

With a view to prevent ſuch a fatal occurrence, the aſſiſtance of ſurgery ſhould be immediately deſired as ſoon as the appearances and ſymptoms we have mentioned give cauſe to ſuſpect that matter is collected: An inciſion of a ſufficient length ſhould be made with a ſcalpel through the external teguments in the moſt depending part of the tumor; and on reaching the

abſceſs,

abſceſs, it may either be opened with the point of the ſcalpel, or with a lancet; but piercing it with a trocar is preferable, as in this manner we have it in our power to evacuate the matter ſlowly and gradually, which in large collections is a point of importance, and therefore merits attention. Even this opening into the abſceſs, however, ſhould be afterwards enlarged, otherwiſe there would be ſome riſk of its cloſing before the cyſt containing the matter collapſes ſufficiently for the prevention of farther collections. This being done, a pledgit of ſoft lint covered with any emollient ointment, or merely dipped in oil, ſhould be gently inſinuated to a ſufficient depth between the lips of the wound, to prevent them from uniting till the abſceſs collapſes and fills up from the bottom; a proceſs that will be much haſtened by a proper application of preſſure upon the tumefied parts, by means of a flannel roller paſſed two or three times round the body.

When the vacuity produced by the diſcharge of matter does not ſoon fill up, it will

will be proper to introduce a canula to preſerve a free paſſage for any matter that may afterwards form. But this precaution is ſeldom neceſſary; for abſceſſes in the liver heal ſooner, and with fewer inconveniencies, than ſimilar affections in perhaps any other part of the body. Indeed this is ſo well aſcertained, that I would adviſe an opening to be made into the abſceſs in every inſtance where there is the leaſt cauſe to ſuſpect that matter has formed in the liver. Many practitioners indeed aſſert, that no attempt of this kind is admiſſible unleſs the abſceſs is ſeated in the convex part of the liver. It muſt be allowed, that abſceſſes in this ſituation are much more acceſſible than ſuch as are ſeated in the concave part of it. But wherever they are ſituated, a proper vent ſhould be procured for the matter; for if not evacuated by an external opening, we may conclude almoſt with certainty, that it will be emptied into the abdomen, by which the patient will inevitably die.

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In all affections of the liver that occur in warm climates, the bark is commonly employed on the first appearance of any of the symptoms: The putrescent tendency of the bile is the ostensible reason of this. But I believe it will be found, that no dependence should be placed upon the bark during the first or inflammatory stage of this disease. In this period of the disorder it may even do mischief; but when suppuration has taken place, and when the matter is discharged from the abscess, bark proves equally useful, as in similar affections of other parts of the body.

When, by too long delay, it unfortunately happens that an abscess either bursts into the cavity of the chest or into the abdomen, the matter should be drawn off immediately; in the one case, by the operation of the empyema, described in Chapter XXVI.; and in the other, by the common operation of the paracentesis, Chapter XXV.

§ 5. *Of Inflammation and Abſceſſes in the Breaſts of Women.*

The breaſts of women are liable to ſuffer from the ſame cauſes which excite inflammation in other parts of the body; but abſceſſes in the breaſt occur moſt frequently in nurſes by the gorging or ſtoppage of the milk, which almoſt conſtantly takes place from ſudden or imprudent expoſure to cold: The breaſt becomes ſtiff, ſwelled, and painful; the milk runs off in ſmall quantities, but not ſo as to afford effectual relief; and the patient grows hot and reſtleſs, while much thirſt prevails, accompanied with a full quick pulſe.

Practitioners are divided with reſpect to the treatment beſt ſuited to caſes of this kind: By ſome it is ſaid, that milk tumors of the breaſt ſhould always be diſcuſſed; while others aſſert, that when this practice does not ſucceed, it often does miſchief, by inducing ſwellings of a ſchirrous nature, which cannot afterwards be

 diſſolved,

diſſolved, and which are apt to terminate in cancer.

In judging of this point, from my own obſervation, it does not appear to me that there is room for doubt: Our practice in inflamed breaſts ſhould be the ſame as in every caſe of inflammation, wherever it is ſeated. In the firſt ſtages of the diſorder, diſcuſſion of the tumor ſhould be always attempted; while it would be in vain, and highly improper, to adviſe it when the ſwelling has been of ſuch duration as to have any tendency to ſuppurate. The riſk of our inducing ſchirrus by this practice, ſeems to be in a great meaſure imaginary: It rather appears, indeed, that cancer is more apt to occur from the improper management of thoſe ſores which enſue from collections of matter in the mamma, than from any means that can be uſed to prevent the matter from forming. We are farther induced to follow the practice, from the great diſtreſs which always attends ſuppuration in the mamma: Indeed, the pain and miſery of the

patient is in ſuch caſes often ſo great, that no doubt can remain with unprejudiced practitioners of the propriety of endeavouring in every caſe to prevent it.

It is ſcarcely neceſſary to remark, that the ſame remedies prove uſeful here, that ſucceed in the diſcuſſion of inflammation in other parts: But it is truly ſurpriſing, that there ſhould be almoſt an univerſal prejudice in every inflamed breaſt againſt the moſt powerful of all diſcutients, blood-letting. Afraid of this evacuation tending to diminiſh the quantity of milk, we avoid it entirely. In this, however, I am convinced we are wrong. In every caſe of this kind, I have been in the practice of bleeding freely. It has not appeared to diminiſh the flow of milk; while its effects in preventing ſuppuration, are, for the moſt part, evident. The quantity of blood to be taken away, muſt always be determined by the violence of the inflammation, and ſtrength of the patient: But, in general, the practice will be more effectual, when as much as the patient can bear

to loſe, is taken at once, than when the ſame, or even a greater quantity, is taken at different times. Purgatives prove particularly uſeful; and a cooling diet is equally neceſſary here, as in other caſes of inflammation.

As nothing tends more to prevent the diſcuſſion of inflamed tumors than pain, nothing ſhould be omitted that can tend to remove it: And as no remedy proves ſo effectual as opium, it ſhould always be given, and in ſuch doſes as are ſufficient for the purpoſe. With a view to remove the tenſion of the breaſt, the parts ſhould be gently rubbed with althea ointment, or with oil: But the applications upon which moſt dependence is to be placed, are thoſe of a cooling aſtringent nature; ſuch as a ſolution of ſal ammoniac in vinegar and water; ſpiritus Mindereri; and all the ſaturnine applications. Cloths dipped in any of theſe, ſhould be kept conſtantly applied to the breaſt; by which, and by attention to the other parts of the treatment already adviſed, almoſt every tumor

 of

of this kind may be removed, unleſs the inflammation has been of long duration; in which caſe, when the pain and tenſion are conſiderable, it is more adviſable to endeavour to bring the tumor to ſuppurate, than to attempt any other method of cure. For this purpoſe, we rely with moſt certainty on a frequent renewal of warm fomentations and poultices; and when matter appears to be fully formed, it ſhould be diſcharged by an opening made in the moſt depending part of the collection: At leaſt, an opening ſhould always be adviſed, when it is found that the matter is pointing at an improper part, where it would not find a free vent.

In the treatment of inflamed breaſts, which occur in nurſing, it is a doubt with many practitioners, whether the milk ſhould be drawn off or not. Indeed many aſſert, that drawing it off, either by continuing the child or with glaſſes, does miſchief; and therefore they adviſe it not to be attempted. I have never obſerved, however, that any inconvenience enſued from

from it; and as it always procures relief, I advise it in every instance. When the breast is much swelled, the nipple cannot be laid hold of by the child: In such cases, the glasses represented in Plate LXVII. may be used with advantage.

§ 6. *Of Inflammation of the Testes.*

INFLAMMATION of the testes may be induced in various ways: By the application of cold; by external violence; and by every other cause that tends to excite inflammation in other parts of the body. But the most frequent cause of it is gonorrhœa virulenta. The common opinion respecting this was, that it occurred from the matter in gonorrhœa falling down, as it was termed, upon the testes: And this appeared the more probable, from its being observed that the testes were apt to swell upon the discharge being stopped, at the same time that the infection of the testes was commonly relieved by a return of the running.

It is now known, however, that no communication ſubſiſts between the urethra and teſtes, by which matter can be conveyed from the one to the other: And the moſt probable opinion is, that in the ſwelled teſtes from gonorrhœa, the inflammation is communicated from the urethra, and ſpreads along the vaſa deferentia to the teſtes.

A ſudden ſtop being put to the diſcharge, whether by the uſe of irritating injections, or by any other cauſe, is very commonly attended with an increaſed degree of inflammation: to abate which, nothing proves more effectual than a return of the running. In this way, we account more clearly than in any other, for the effect produced upon the teſtes by the ſtate of the running.

Inflammation of the teſtes very rarely terminates in ſuppuration: But this ſhould not prevent the moſt timeous application of thoſe remedies which we know to be the moſt powerful diſcutients. Blood-letting is perhaps the moſt effectual

tual remedy; but it always proves moſt ſerviceable when the blood is taken directly from the part affected by means of leeches. After diſcharging a ſufficient quantity, the ſwelling ſhould be kept conſtantly moiſt with a ſolution of Saccharum Saturni; the ſcrotum and teſtes ſhould be properly ſuſpended; the bowels ſhould be kept moderately open; a low diet ſhould be preſcribed; and the patient ſhould be ſtrictly confined to a horizontal poſture. When there is cauſe to ſuſpect that the conſtitution is tainted with lues venerea, nothing will prove ſerviceable if a mercurial courſe is neglected. And when it appears that the diſeaſe has been induced by the diſcharge having been too ſuddenly checked, we ſhould endeavour to promote a return of it, by bathing the penis in warm water; by injecting warm oil into the urethra; or by the uſe of bougies.

In this manner, we ſcarcely can fail of removing inflammation of the teſtes by diſcuſſion: But when the contrary happens, either from the uſe of the remedies

not being duly persisted in, or from the inflammation being particularly violent, and when suppuration is found to have taken place, the matter must be discharged by an opening made in the most depending part of the abscess; which in every respect should be treated like collections of pus in other parts of the body.

§ 7. *Of Venereal Buboes.*

SWELLINGS of the lymphatic glands from the absorption of the venereal virus are termed Venereal Buboes. They may appear in any gland seated between a venereal sore and the heart: But they are most frequent in the groin, in consequence of the absorption of venereal matter from sores in the penis. For the most part they are produced by matter absorbed from chancres, and in some cases the glands swell from sympathy in gonorrhœa: But instances likewise occur of buboes arising without any previous ulceration

tion or discharge from the penis, where the matter appears to be absorbed without any perceptible erosion of the skin.

The most material point to be determined in the treatment of bubo is, whether we should endeavour to discuss the swelling, or bring it to suppuration? While the opinion prevailed that buboes were produced by the deposition of venereal matter from the system, it was not surprising to find practitioners advising us in every instance to promote their suppuration: For on this supposition it was probable that nature meant by these swellings to throw off the infection. But now when we know that buboes arise from matter passing into the system, that the quantity of venereal matter is increased instead of being diminished, by their being brought to suppurate; and that the sores which ensue from them are often very difficult to cure; scarcely any will doubt of the propriety of endeavouring to remove them by discussion.

With this view the patient should be put upon an antiphlogistic regimen. His bowels

bowels ſhould be kept open by the uſe of purgatives; leeches ſhould be applied to the hardened gland; and it ſhould be kept conſtantly wet with a ſtrong ſolution of ſaccharum ſaturni. Along with theſe, however, mercury ſhould be given in quantities ſufficient for eradicating the diſeaſe: And as we know from experience that mercury proves moſt effectual when made to paſs through the diſeaſed glands, it ſhould always be applied in the form of unction to thoſe parts in which the lymphatics of the affected glands are known to originate: A practice which will almoſt always be found to prove more effectual than the direct application of mercury to the glands themſelves. Thus in the diſcuſſion of a bubo in the groin, friction with mercurial ointment upon the thigh and leg will prove more ſucceſsful than rubbing it upon the gland itſelf. To many this has been long known; and it would appear that the practice could ſcarcely fail of occurring to any who have paid attention to the diſ-

coveries

coveries made by the moderns in the anatomy of the lymphatic syſtem.

When buboes are early noticed, the courſe we are now recommending will ſeldom fail in diſcuſſing them, if the mercurial frictions are properly applied and continued for a ſufficient length of time. It often happens, however, that all our efforts fail, either from the diſeaſe being too far advanced before the mercury is applied, or from the tumor not being altogether venereal, but of a mixed nature; a circumſtance which is not unfrequent. Thus, it frequently happens that buboes are combined with ſcrophula and ſcurvy, and in ſome caſes with eryſipelas or with common phlegmon. In ſuch caſes we are not ſurpriſed at the failure of mercury: And accordingly we ſometimes find, that inſtead of forwarding the diſcuſſion of the ſwelling, it tends rather to bring it to ſuppuration. Caſes of this kind prove often very perplexing both to the patient and practitioner; ſo that no point in practice

practice requires more exact attention and discrimination: For by proceeding to throw in great quantities of mercury, as is usually done while buboes remain obstinate, we often do harm, not merely to the local affection, but to the system at large; at the same time that in every instance the safety of the patient requires such a quantity to be exhibited as is sufficient for eradicating the venereal virus. In all such cases, the best practice, I believe, is to desist from the use of mercury as soon as it appears that no advantage is derived from it. In the mean time, by a change of diet and other circumstances, such an alteration may be affected in the constitution, that a second trial of mercury may prove successful: At least, in different instances, this has succeeded with me, where I had much reason to think that persisting longer with mercury at first would have done harm.

When it is found that a bubo cannot be discussed, and that it will probably suppurate, a frequent renewal of warm emol-

lient

lient poultices and fomentations are the remedies to be moſt depended upon.

The opening of buboes when ſuppuration has taken place next demands our attention. Some diſſuade us from opening buboes at all, alleging that they heal ſooner when allowed to burſt of themſelves: While a ſmall puncture with a lancet, a longitudinal cut through the whole extent of the ſwelling, or the application of cauſtic, have all had their abettors.

When a bubo is altogether venereal, and not connected with any other affection, any of theſe methods will ſucceed, provided a ſufficient quantity of mercury is exhibited: But when a bubo terminates in a ſore difficult of cure, we are too apt to blame the particular method in which it was opened; for in whatever manner it is done, we know that the cure will often prove tedious and perplexing.

The object of practitioners ſhould be nearly the ſame here as in collections of matter in any other part. Such an opening

opening ſhould be made as will afford a free vent to the matter: But there is ſeldom any neceſſity for making it larger. In large buboes, indeed, the teguments are apt to be ſo looſe and flabby, and the texture of the ſkin ſo much deſtroyed, that the cure would be rendered tedious were it allowed to remain. In ſuch caſes it is adviſable to diſcharge the matter with cauſtic applied in ſuch a manner as to deſtroy any part of the teguments that appear to be ſuperabundant. This, however, is ſeldom neceſſary; and for the moſt part it will be found that an opening made from the centre of the tumor, where the matter commonly points, down to the moſt depending part of it, will prove ſufficient. Even a ſmaller opening than this would often anſwer; but it is better to make it of a ſufficient ſize at once, than to be obliged to repeat a very painful operation perhaps once and again, as is often neceſſary when buboes of a large ſize are opened by ſmall punctures. In ſmall buboes, a mere

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puncture will ſometimes prove ſufficient; nay in theſe, the matter being allowed to burſt, often anſwers extremely well: But when the collection is large, this ſhould never be depended on.

When buboes come forward to full maturation, without much injury being done to the ſkin, I have in different inſtances diſcharged the matter by the introduction of a ſmall cord; and the practice has ſucceeded. This requires, however, the teguments to be firmer than they commonly are when a bubo is ready to be opened.

We all know that it is of much importance to prevent the air from finding acceſs to ſores; and as we ſometimes obſerve buboes ooze out the matter which they contain by a number of ſmall openings over their ſurface, and as theſe commonly heal eaſily, I conclude that they do ſo from the openings being ſo ſmall as to exclude the air entirely. In different caſes, I have with this view attempted to imitate nature, by making a number of ſmall

ſmall punctures with the point of a lancet over the whole extent of the bubo; and for the moſt part with ſucceſs. The matter comes ſlowly off; the ſides of the abſceſs contract gradually; and when completely emptied, we commonly find the whole parts that have been affected, ſufficiently firm, without any ſores or ſinuſes remaining.

While means are employed to promote the ſuppuration of a bubo, the patient ſhould ſtill continue the mercurial courſe, by which no time will be loſt; and the ſore, which is the conſequence of the opening, will afterwards heal more quickly than if the mercury had been interrupted. The ſore, however, often proves tedious, even where we are convinced that a ſufficient quantity of mercury has been given, and where there is reaſon to ſuppoſe that the ſiphylitic virus is eradicated. The edges become hard and livid; the matter thin, ſharp, and fetid; and inſtead of healing, the ulceration gradually becomes more extenſive; or if it heals in ſome parts, it breaks out in others,

thers, giving a honey-comb appearance to all the under part of the abdomen and upper part of the thigh.

The situation of patients with such sores is truly deplorable. The pain with which they are attended is often intense; the absorption of acrid matter induces hective fever; the patients become hot and restless through the night; and almost a total want of appetite renders them soon much emaciated.

As I have happened to be concerned in a considerable number of such cases, I can speak with some confidence of the method of treatment. In the first place, we are here to suppose, that the patient has taken a sufficient quantity of mercury, and that no sinuses are left, in which matter in any quantity will be allowed to lodge. Cicuta, in such circumstances, has sometimes proved useful; and I have had different instances of the the sores being healed by the external application of it when no advantage was derived from any of the usual dressings. In such cases, it was applied

in the form of poultices, by mixing the juice of the fresh herb with the common emollient cataplasm. I have sometimes observed too, that in the internal exhibition of cicuta, the recent expressed juice has proved more effectual than any other form of it. I have given the hyoscyamus and belladona very complete trials in various instances; but commonly with no material advantage. Sarsaparilla, guaicum, and mezereon, all prove useful here; and they seem to act with most advantage, when used all at the same time: guaicum and mezereon prove even serviceable when used seperately; but I have, in different instances, found that they act with more advantage, when combined in the following form with sarsaparilla:

℞ Rasur. ligni guaiac. ℥ss.
Radicis sarsaparillæ, ℥iss.
Corticis radicis mezerei, ʒi.
Radicis glycyrrhizæ, ʒiii.
Aq. fontanæ, ℔iii. coque ad ℔ii.
Colaturæ adde
Syrup. altheæ, ℥i

This

This quantity to be ufed daily, by drinking a cupful from time to time.

But the moft effectual courfe I hav hitherto tried, is the application of cauftic round all the edges and hardened parts of the fores, at the fame time that opium in confiderable quantities is given inwardly. For a confiderable time, I trufted entirely to dreffings of the emollient kind, being afraid of irritating parts already highly fenfible. In fome cafes, a faturnine ointment has proved fuccefsful; and in others, the common calamine cerate has anfwered; but for the moft part, on thofe days in which cauftic is not applied, I have found more advantage from the ufe of red precipitate, than from any other remedy. In fome cafes, it is neceffary to fprinkle it over the furface of the fore, in the form of a dry powder; but in others, it proves fufficient to add it to any of the common ointments. Inftead of creating pain, it commonly removes it; and it feldom fails to alter the difcharge from a thin fharp fanies to a thick well digefted pus. Mu-

cilage of gum arabic, impregnated with calomel, ſometimes anſwers in the healing of theſe ſores, when the uſual dreſſings fail: A drachm, or even more, of calomel may be mixed with one ounce of thick mucilage.

Lunar cauſtic, at firſt, ſometimes gives pain; but this ſoon ſubſides, eſpecially when opium is uſed at the ſame time. Indeed, opium of itſelf proves often uſeful in theſe ſores. It has been highly extolled of late for the cure of every ſtage of the venereal diſeaſe. I have had no proof of its ever curing any ſymptom truly venereal; but I have had ſeveral inſtances of ſores remaining after the venereal diſeaſe, being completely removed by it, where large quantities of mercury had previouſly been given in vain. It often appears that theſe ſores, as well as others proceeding from different cauſes, are kept up by that pain and irritation with which evey are accompanied when the matter is thin and acrid. Opium, by removing this ſtate of irritability, ſeems to deſtroy the

the diſpoſition in the veſſels of the ſore to form that kind of matter which, by its own acrimony, ſerves to perpetuate itſelf; and this being accompliſhed, if no other interruption takes place, nature alone will ſeldom fail to complete the cure. If this idea is well founded, there can be no neceſſity for giving opium in ſuch large quantities as of late have been adviſed. On the ſuppoſition of opium being poſſeſſed of ſome ſpecific powers in the cure of the venereal diſeaſe, it has been given in as large doſes as the patient could poſſibly bear; and by beginning with ſmall doſes, and increaſing them gradually, there have been inſtances of its being taken to the extent of half a drachm or more, two or three times a day. I have not heard, however, that any advantage has been derived from it in thoſe large quantities, that did not accrue from a more moderate uſe of it: And in the courſe of my own experience, I have found it equally effectual, when it merely leſſened or removed pain, as when given in the largeſt doſes; while

the inconveniencies which uſually ariſe from theſe have never been of any importance *.

§ 8. *Of Lumbar Abſceſſes.*

EVERY collection of matter ſeated on any part of the loins, may be denominated a Lumbar Abſceſs. But it is that varaity of the diſeaſe we are now to conſider, which originates about the ſuperior part of the os ſacrum; and in which we find, by diſſection, that the matter contained in a cyſt, is lodged on the anterior ſurface of the internal iliac and pſoas muſcles.

Theſe abſceſſes are preceded by pain and tenſion over the loins; which often ſhoots up along the courſe of the ſpine, and down towards the thighs; and is frequently

* A more particular account of buboes, and of the ſores which enſue from them, may be ſeen in a treatiſe which I have newly publiſhed on the venereal diſeaſe, than could with propriety be inſerted here.

quently accompanied with difficulty of ftanding in an erect pofture. In fome cafes, thefe fymptoms are fufpected to be nephritic; but for the moft part the difeafe affumes the appearance of lumbago. When fuppuration enfues, fhivering fits are apt to occur: But the pain, which at firft was acute, becoming dull and lefs perceptible, the patient is led to conclude that he is getting better, till the matter, after falling down in a gradual manner behind the peritonæum, is obferved to point outwardly, either at the anus by the fide of the rectum, or on the upper and fore part of the thigh, where the large blood-veffels pafs out, beneath Paupart's ligament, from the abdomen.

When the matter takes the courfe of the gut, and appears near to the anus, it either foon burfts, or is laid open on the fuppofition of its being an abfcefs originating in the contiguous parts. But when it paffes down with the fœmoral artery, which we find to be moft frequently the cafe, as it lies deep, and is cover-

ed with the ſtrong tendinous faſcia of the thigh, inſtead of pointing at any particular part, it falls gradually lower till in ſome caſes it reaches near to the joint of the knee. In ſome I have known theſe abſceſſes firſt appear immediately within the ſpine of the ileum, and the matter burſt out above the os pubis, but in general before burſting, it falls farther down upon the thigh.

The tumor is ſeldom attended with more pain than might be expected to occur from the diſtention of the faſcia and contiguous parts by the matter collected beneath. There is no diſcolouring of the ſkin; the teguments, for the moſt part, retaining their natural appearance to the laſt. A fluctuation of a fluid is evidently diſcovered through the whole extent of the tumor, particularly when the patient is erect: For at this time the ſwelling is always more tenſe than when the body is lying in a horizontal poſture, when a conſiderable part of the matter runs along the ſac towards its origin in the loins.

We have already obſerved, that this variety of abſceſs, when the matter falls down towards the anus, may be miſtaken for a common phlegmon originating in the neighbourhood of the rectum. But no farther inconvenience can occur from this miſtake, than that the ſore, which enſues from laying it open, or from the matter burſting out, will not ſo readily heal as when the diſeaſe is local: And it is probable that this is one cauſe of abſceſſes in theſe parts being in ſome inſtances ſo difficult to cure. But in the more ordinary form of the diſeaſe, where the matter falls down beneath Paupart's ligament, the tumor exhibits appearances ſo ſimilar to thoſe of a crural hernia, that the one has often been miſtaken for the other. Of this I have ſeen different inſtances, even where practitioners of experience were deceived. This proceeds, however, from inattention; for the two diſeaſes may be clearly diſtinguiſhed from each other.

The

The hiſtory of the riſe and progreſs of the ſwelling ſhould be firſt attended to. A crural hernia uſually appears ſuddenly, after ſome unuſual exertion, and without any previous ſymptom; for the moſt part it is attended with obſtruction to the paſſage of the fæces, with vomiting, and other ſymptoms of hernia; and from the firſt, the tumor is attended with pain on being handled. But in the lumbar abſceſs, before the matter appears at the top of the thigh, the patient is previouſly diſtreſſed with ſymptoms of inflammation over all the under part of his back and loins. No obſtruction of the bowels takes place, nor any ſymptom of hernia; and the patient admits of the tumor being freely handled. In the crural hernia, the ſwelling ſeldom arrives at any conſiderable bulk; and when it does become large, it is by ſlow degrees: No fluctuation is perceived in it; but, on the contrary, it feels either ſoft like dough, or knotty and unequal, according as the omentum or fæces contained in it have been

been long lodged in it or not. But in lumbar abſceſſes of this kind, the tumor commonly falls quickly down the thigh for the ſpace of ſeveral inches; a fluctuation is always perceived; and no inequalities are obſerved in it. In hernia, even when not ſtrangulated, ſome degree of preſſure is uſually neceſſary to make the contents of the tumor recede. But in the lumbar abſceſs, the tumor becomes flaccid immediately on the patient lying down, whether any preſſure is applied to it or not: And it often happens, when the matter has fallen any conſiderable way down the thigh, that the upper part of the cyſt at the top of the thigh is found perfectly clear; that is, a certain ſpace can be diſcovered between the upper part of the matter and the inferior border of the abdominal muſcles, which can never be done in any kind of hernia; and which, therefore, in this ſtate of the diſeaſe, is always a certain means of diſtinction. It is ſcarcely neceſſary to obſerve, that in this kind of examination the

the patient ſhould be put into different poſtures.

By due attention to theſe circumſtances we may always diſtinguiſh one of theſe tumors from the other. Both indeed may occur at the ſame time in the ſame thigh, by which a mixture of appearances will be produced. This, however, muſt be extremely rare; and when it does take place, as the matter of the abſceſs and the parts protruded from the abdomen will always be contained in ſeparate ſacs, the combination will for the moſt part be eaſily diſcovered.

In the treatment of theſe affections, the period of the diſeaſe firſt requires attention. While the inflammatory ſtate continues, the ſtricteſt antiphlogiſtic courſe ſhould be adopted, in order if poſſible to prevent the formation of matter. For the moſt part, we diſcover, that it has been induced by ſome injury being done to the ſmall of the back or loins, not unfrequently by a twiſt in wreſtling; by carrying a heavy load, or by a ſevere bruiſe; and if accidents of this nature were

were immediately treated with that attention which their importance merits, those disagreeable consequences which are apt to ensue from them might frequently be prevented. Whenever a patient, who has suffered in this manner, complains of severe pain in the injured part, blood-letting should be immediately advised; and as local blood-letting proves always in such cases most effectual, it should be done by cupping and scarifying the pained part. The affected parts being deeply seated, the lancets of the scarificator should be made to go to a considerable depth; for which purpose the spring of the instrument should be stronger than usual, by which means any quantity of blood we may judge proper may be taken with ease; and I am convinced, that by carrying this practice a sufficient length, we might very commonly, in the early stages of the disease, remove it entirely. It is difficult to say when injuries of these parts would terminate in suppuration or otherwise; but I have met with different instances, where, from

from the ſeverity of the pain and other ſymptoms, there was much cauſe to ſuſpect that matter would have formed, if it had not been prevented by a timeous and plentiful diſcharge of blood from the injured parts; a remedy which commonly gives immediate relief to the pain, however violent it may be. But at the ſame time that we depend chiefly on local blood-letting, other remedies which experience ſhows to prove uſeful in inflammation ſhould not be neglected: Of theſe, bliſters, opiates, and gentle purgatives are moſt to be relied upon.

Theſe, however, as well as every other remedy, will in ſome inſtances fail; and in others, practitioners are not called till ſuppuration has taken place, and till the matter has actually begun to point, either in the neighbourhood of the anus, or on the fore part of the thigh. In this ſituation, what are we to do? Are we to allow the matter to remain, or to diſcharge it by making an opening into it? In my opinion there is no room for heſitation: The matter

matter ſhould be evacuated as ſoon as a fluctuation is diſtinctly perceived in the tumor.

I know, however, that practitioners are of different opinions upon this point: For it is alleged, that as theſe abſceſſes are ſo deeply ſeated, it would be in vain to attempt the cure of them; and therefore that no advantage can be derived from laying them open; while much harm, they obſerve, may accrue from the air being freely admitted to them. But it does not appear that this reaſoning is founded on obſervation. I have always held it as a leading principle in ſurgery, that the matter of every abſceſs, ſeated upon or near to any of the large cavities of the body, ſhould be diſcharged as ſoon as its exiſtence is clearly aſcertained: So that in the treatment of the lumber abſceſs, I have uniformly given vent to the matter, and without any bad conſequences enſuing; while much miſchief may occur from this being omitted. We find by diſſection after death that theſe abſceſſes, when

of

of long duration, affect not only the ſofter parts covering the vertebræ of the loins, but the ſubſtance of the vertebræ themſelves; which in ſome caſes have been found carious, and even partially diſſolved in the matter of the abſceſs. Now theſe accidents are ſurely more likely to happen when the matter is allowed to continue in the abſceſs, than when diſcharged early: At the ſame time, by emptying the ſac, the matter is prevented from burſting into the cavity of the abdomen: Which in different inſtances has happened, to the great inconvenience and hazard of the patient. The matter, however, ought certainly to be diſcharged in ſuch a way as to prevent the air as effectually as poſſible from getting acceſs to the cavity of the abſceſs. With this view a trocar may be uſed with advantage. By preſſing the matter down to the moſt depending part of the abſceſs, the ſkin is made ſo tenſe, that a trocar is readily introduced. I tried this in one caſe with very complete ſucceſs; and the patient wore a ſmall canula in the opening

ing for ſeveral months, by which the matter was freely diſcharged. But when the caſe is not perfectly obvious, and where any doubt remains of the contents of the tumor, inſtead of puſhing a trocar into it, the opening ſhould be made in a ſlow gradual manner with a ſcalpel, in the ſame manner as is practiſed in caſes of hernia; ſo that in the event of any of the contents of the abdomen being down, no injury may be done to them.

After the matter has continued to flow for ſome time, and if at the end of two or three weeks the quantity does not become conſiderably leſs, it may prove uſeful to throw up with a ſyringe a weak ſolution of ſaccharum ſaturni, lime-water, or any other gentle aſtringent; by which the diſcharge will be gradually diminiſhed, and at laſt may ceaſe entirely. But although this ſhould never happen, and although the patient, during life, ſhould ſubmit to the inconveniency of a conſtant ſtillicidium of matter from the ſore; yet even this would be preferable to the riſk

of allowing every abſceſs of this kind to remain unopened.

As I have happened to meet with many inſtances of this diſeaſe; as practitioners are divided in opinion reſpecting it; and as no diſtinct account of it is given by authors; I have therefore judged it proper to ſpeak of it more fully than otherwiſe might have beeu neceſſary.

§ 9. *Of the Paronychia or Whitloe.*

THE paronychia is a painful inflammatory ſwelling, occupying the extremities of the fingers, moſt frequently under the nails.

Several varieties of this diſeaſe are deſcribed by authors; but three only require to be diſtinguiſhed, and even theſe are all of the ſame nature, the one being only more deeply ſeated than the others.

In the firſt, the patient complains of an uneaſy burning ſenſation for ſeveral days over the point of the finger; the part becomes tender and painful to the touch; a

ſlight

ſlight degree of ſwelling takes place, but with little or no diſcoloration; and if the inflammation be not removed by reſolution, an effuſion is at laſt produced between the ſkin and parts beneath. On diſcharging this by an inciſion, it appears to be a thin, clear, acrid ſerum; and the patient, in general, gets complete relief by the operation.

In the ſecond variety of the diſeaſe the ſame ſet of ſymptoms take place; only the pain is more ſevere, and attended with ſome uneaſineſs over the whole finger and hand. The effuſion of matter is not ſo perceptible as in the other; and on laying it open, it is found to lie beneath the muſcles of the finger, between theſe parts and the perioſteum.

And in the third, the pain is ſtill more intenſe in the point of the finger, at the ſame time that the whole hand and arm becomes ſtiff, ſwelled, and painful. The lymphatics leading from the finger, and even the glands in the arm-pit, ſwell and inflame; and on making an inciſion into

the effufion, it is found to lie between the periofteum and bone, the whole correfponding phalanx being in general carious.

Swellings of this kind may be produced by various caufes. They frequently occur from external violence, particularly from punctures and contufion: But they happen more frequently without any obvious caufe, and without our being able to account for them.

Two fets of remedies are employed in paronychia: The one confifts of fomentations, poultices, and other emollients; the other of ardent fpirits, vinegar and other aftringents.

As we find from experience that no advantage is derived from the effufion which occurs in this difeafe; on the contrary, that it is always productive of much additional pain, all thofe applications fhould be avoided which have any tendency to promote it. Some practitioners have been induced to employ warm emollient poultices on the firft appearance of the fwel-

ling

ling. This they do with a view to promote ſuppuration; but I have never obſerved that any advantage accrues from it. The matter of a whitloe is never of the purulent kind, nor is it ever converted into pus, or rendered mild by poultices, or any other remedy. We ſhould endeavour therefore in every inſtance to prevent it from being effuſed; and this is done with moſt certainty by local blood-letting, and the uſe of aſtringent applications. Indeed the ſame remedies prove moſt effectual here, that we find to be ſo in the removal of inflammation in other parts. In various inſtances, I have found even ſevere degrees of pain almoſt immediately removed by the application of leeches over the diſeaſed phalanx of the finger. But in the more violent degrees of pain, where the arm ſwells, and eſpecially when fever takes place, general blood-letting becomes likewiſe neceſſary, at the ſame time that large doſes of opiates are indicated.

After as much blood is diſcharged by leeches as is judged proper, the immer-

ſion of the pained parts in ſtrong brandy, or even in ſpirit of wine or alcohol, is one of the beſt remedies: And when the bites are ſomewhat healed, or when leeches have not been employed, ſpirit of turpentine or ſtrong vinegar may be uſed in the ſame manner.

It is proper, however, to remark, that it is in the firſt ſtages only of this affection that remedies of this kind can prove uſeful: For when effuſion has actually taken place, that ſtate of the diſeaſe is produced which they were meant to prevent; and it does not appear that they have any effect in removing it. As ſoon as we are convinced that effuſion has occurred, an opening ſhould be made without delay: For we have already obſerved, that it is in vain to attempt to convert the effuſed fluid into pus; and being in itſelf acrid, it is apt to injure the contiguous parts, while at the ſame time the patient is kept in an extreme degree of pain as long as it remains confined. When the collection is ſuperficial, and merely

merely covered with ſkin, this is a very ſimple operation. A puncture with a lancet commonly proves ſufficient: But when the matter is more deeply ſeated, it requires ſome attention to avoid the flexor and extenſor tendons of the finger.

When the matter lies above the perioſteum, all that we have to do is to make the opening ſufficiently large for diſcharging it, and to dreſs the ſore as if it was produced by any other cauſe. But, when the matter lies between the perioſteum and bone, the latter is always rendered carious: Hence it is the common practice to endeavour to keep the inciſion open till an exfoliation of the diſeaſed parts of the bone takes place; but I have never obſerved any advantage accrue from this. The proceſs is not only extremely painful, but tedious. The matter is apt to lodge beneath the nail; painful fungous excreſcences ſprout out over the ſore, which it is difficult even with the ſtrongeſt cauſtic to keep down; and at laſt it very commonly happens, af-

ter the patient has ſuffered ſeveral months of diſtreſs, that inſtead of a partial exfoliation, the whole diſeaſed phalanx comes away. I am therefore convinced, that much time and trouble would be ſaved both to the patient and ſurgeon, if the diſeaſed bone was immediately removed on making the opening to diſcharge the matter. By making a free inciſion along the whole length of the diſeaſed phalanx, the bone is eaſily removed with common forceps. The pain attending it is indeed ſevere, but it is only momentary: And the meaſure, which does not deprive the patient of the uſe of the joint ſo much as might be imagined, is ſeldom oppoſed when the ſurgeon adviſes it. I have had ſeveral inſtances of people who in this manner loſt the laſt phalanx of bone in one finger, having ſuch a degree of firmneſs in the parts which remained, as to ſuffer very little inconvenience from the want of it.

When the diſeaſed bone is removed, the remaining ſore commonly heals eaſily. It requires

requires ſome attention, however, to preſerve the lips of the ſore from adhering till it fills up from the bottom. This is moſt eaſily done by inſinuating between them at each dreſſing a ſmall pledgit of ſoft lint, ſpread with any mild emollient ointment.

In almoſt every variety of paronychia, the nail is apt to fall off: But this proves only a temporary inconvenience; for when the parts are properly protected, nature never fails to ſupply the deficiency.

In the commencement of paronychia, the laſt phalanx of the finger only is affected: And to whatever extent the pain and ſwelling of the ſofter parts may ſpread, we ſeldom find that the bone of the contiguous phalanx ſuffers, unleſs from improper management in allowing the diſeaſed bone to remain, or the acrid matter to lodge too long. In ſuch caſes, the ſurrounding teguments are apt to ſwell and inflame, and ſmall ulcerations to occur over the whole extent of the carious bone. In this ſituation we are often under

under the neceſſity of adviſing the finger to be amputated, in order to prevent the diſeaſe from ſpreading to the hand.

§ 10. *Of Chilblains.*

THESE are painful inflammatory ſwellings, to which the fingers, toes, heels, ears, and other extreme parts of the body, are liable, on being much expoſed to ſevere degrees of cold. The tumor is for the moſt part of a deep purple, or ſomewhat of a leaden colour: The pain with which it is attended is not conſtant, but ſhooting and pungent; and in general, it is accompanied with a very diſtreſsful degree of itching. In ſome caſes the ſkin remains entire, even although the tumefaction is conſiderable; but in others it burſts or cracks, and diſcharges a thin fetid matter. And where the degree of cold has either been very great, or the application of it long continued, all the parts that have been affected are apt to mortify

mortify and ſlough off, by which a very foul ill-conditioned ulcer is always left.

We have obſerved above, that it is the extreme parts of the body chiefly that are liable to be attacked with chilblains: And we likewiſe find, that they are more frequent in delicate children and old people than in thoſe who are robuſt. It is alſo remarked, that they are particularly ſevere in people of ſcrophulous conſtitutions.

The beſt preventative of chilblains is to avoid expoſure to cold and dampneſs; for when once a perſon has ſuffered from ſwellings of this kind, if the injured parts be not protected by ſufficient coverings, they are apt to return every winter. Much diſtreſs, therefore, and inconvenience, may be prevented by due attention to this circumſtance.

Chilblains may be conſidered as a leſſer degree of what is uſually termed froſt-biting: Hence parts attacked with them ſhould never be quickly warmed. The patient ſhould not be allowed to approach a fire:

fire: Inftead of which, he fhould be put into a cold apartment; and the froft-bit parts fhould be firft well rubbed with fnow when it can be procured, and afterwards immerfed in cold water. Nothing proves fo certainly hurtful to parts in this ftate as heat fuddenly applied. Even fnow and cold water afford a warm fenfation to parts attacked with chilblains; but it is found by experience that no detriment enfues from this. After the parts have been treated in this manner, the patient may in a gradual way be brought into a greater degree of heat; but he fhould for a confiderable time be kept at a diftance from fire. Rubbing the parts with falt will in this fituation prove ufeful; and immerfion in warm wine is likewife employed with advantage.

A patient much benumbed with cold fhould not even have cordials given to him fuddenly. A glafs of cold wine may at firft be allowed. Afterwards warm wine may be given, either by itfelf or mixed with any of the warmer fpices: And

And when ſtronger cordials are required, ardent ſpirits may be employed.

Remedies of this kind, however, are only neceſſary in the more ſevere degrees of theſe affections. In common caſes of chilblains occurring in this country, as ſoon as the part is perceived to be affected, it ſhould be well rubbed either with ſpirit of turpentine, or camphorated ſpirit of wine; and pieces of ſoft linen moiſtened in one or other of theſe ſhould be kept conſtantly applied to it. In this manner we have it often in our power to remove ſwellings which otherwiſe would be productive of much diſtreſs: But we muſt again obſerve, that the beſt advice that can be given to patients liable to chilblains, is to protect the parts much expoſed to ſuffer from cold as much as poſſible during the winter; and when by accident they get wet with ſnow, which proves more particularly hurtful than moiſture of any other kind, that they ſhould be dried as quickly as poſſible.

As ſome patients ſuffer ſeverely with chilblains every winter, our being able to prevent

prevent them without that inconvenience, which always attends confinement and much caution, would often be an object of importance; and it is a point upon which practitioners are frequently consulted. In different inftances I have found fea-bathing during fummer prove ufeful, and in one patient who had fuffered feverely from the effects of cold for feveral winters, I advifed a chamber-bath to be ufed even during winter; by which the parts which ufed to fuffer were fo much ftrengthened, that feveral years have elapfed without any return of the difeafe.

When chilblains ulcerate, by the teguments being altogether thrown off, or merely cracking and oozing out matter, warm poultices and emollient ointments are commonly employed. For the purpofe of cleanfing the fores, and inducing a difcharge of right matter, poultices may with propriety be advifed for a few days; but they fhould never be long continued: Nor fhould emollient ointments be much perfifted in; for they very univerfally induce

duce fungous excreſcences over the ſores, which are often difficult to remove. The daily application of cauſtic to the edges of the ſore, and dreſſing the ſore itſelf with common digeſtive ointment, mixed with a due proportion of red precipitate, are the beſt preventatives of this. Common diachylon plaſter, ſpread upon thin leather, makes an uſeful application for ſores of this kind.

§ 11. *Of Sprains and Contuſions.*

Contusions of the ſofter parts of the body, and ſprains of the tendons and ligaments of joints, are uſually productive of immediate painful inflammatory ſwellings.

Slight affections of this kind ſeldom meet with much attention; but when the injury is ſevere, it often requires the utmoſt ſkill of the practitioner, as well as much caution on the part of the patient, to remove thoſe effects which enſue from it, and which otherwiſe might continue during life.

An

An increaſed action in the arteries of an injured part, by which red globules are forced into veſſels which naturally do not admit them, will account for all the phenomena which uſually attend inflammation: But in the ſeverer degrees of ſprains and contuſions, along with an increaſed action of the arteries in the part, which muſt neceſſarily reſult from the pain with which they are accompanied, it is evident that inſtantaneous effuſion likewiſe takes place, from the rupture of a great number of ſmall veſſels. In no other way can we account for thoſe tumors of conſiderable bulk, which often ſucceed almoſt inſtantaneouſly to ſprains. For the moſt part the effuſion muſt be of the ſerous kind, as the ſkin uſually retains its natural colour for ſome time after the accident: But the tumefied parts are ſometimes of a deep red, and on other occaſions of a leaden colour, from the firſt; owing to a rupture of ſome of the veſſels containing red blood.

In

In the treatment of ſprains and contuſions, two circumſtances chiefly require attention. In the firſt place, we ſhould endeavour to prevent the ſwelling, as far as this can be done, and afterwards thoſe remedies ſhould be employed which we know to prove moſt powerful in preventing or removing inflammation.

It is alleged, indeed, by ſome, that the ſwelling which occurs from contuſions never does harm, and therefore requires no particular attention. In contuſions of the cellular ſubſtance, or even of the muſcles, I allow that this is often the caſe; for to whatever extent the tumefaction may proceed, the effuſed fluid is in theſe parts very commonly abſorbed. But even here the ſwelling in ſome caſes proves extremely obſtinate: And in ſprains of the tendons and ligaments, a very troubleſome, painful thickneſs of the parts that have been injured, is apt to continue for a great length of time; in ſome caſes, even for life: And I have commonly obſerved, that this has in general been nearly in propor-

tion to the ſize of the tumor which occurred at firſt; for it would appear that effuſions thrown out by ligamentous parts are not ſo readily abſorbed as thoſe which occur in other parts of the body. Hence in all theſe accidents, it is an object of importance to prevent the ſwelling from arriving at any conſiderable magnitude.

With this view, we depend chiefly on aſtringent applications; ſuch as the lees of red wine, ardent ſpirits of every kind, and vinegar. By immerſing a ſprained or contuſed part in any of theſe immediately on receiving the injury, if the effuſion be not altogether prevented, it will at leaſt be rendered much leſs than otherwiſe it probably would be. And it often happens that the immediate application of cold proves equally uſeful. Plunging a ſprained limb into the coldeſt water that can be procured, or even into water rendered artificially colder than natural, is a practice that often proves uſeful; and it ſhould be always adviſed in the firſt place, till one or other of the articles mentioned above

can

can be procured; for as the effuſion takes place quickly, no time ſhould be loſt in the application of the remedies.

It fortunately happens, that thoſe applications which prove moſt effectual in preventing the effuſion that enſues from ſprains, prove likewiſe uſeful in preventing inflammation. But as this ſymptom is in ſevere ſprains apt to proceed to a great height, other remedies are required in the treatment of it; and none that I have ever employed prove ſo effectual as local blood-letting. By the time that cold water and other diſcutients may be ſuppoſed to have produced any effect, and which will be in the ſpace of an hour, a number of leeches ſhould be applied over all the tumefied part; or, in contuſions of fleſhy muſcular parts, cupping and ſcarifying will be found to anſwer equally well. But in whatever way it is done, a quantity of blood ſhould be drawn off ſomewhat proportioned to the ſtrength of the patient and violence of the injury.

For a long while paſt, I have been in the conſtant practice of employing local blood-letting in ſprains and contuſions of every kind; and in all of them, whether the injury has been ſlight or ſevere, it has proved an uſeful, pleaſant, remedy. In the ſlighter kind of ſprains, one plentiful evacuation of blood by means of leeches, will in general prove ſufficient. But when the parts are much injured, we are under the neceſſity of applying them repeatedly. They ſhould be ordered indeed from time to time as long as any conſiderable pain remains in the affected parts. Even when the inflammation and ſwelling of the teguments are gone, a fulneſs or thickening is often diſcovered in the tendons and other deep-ſeated parts; and we conclude, that they continue inflamed, as long as they are much pained either by preſſure or motion. In this ſituation nothing ever proves ſo effectual as the application of leeches: The remedy indeed ſeems to prove equally uſeful, whether the inflammation be ſeated entirely in the ſkin, or in the more deep-

deep-ſeated parts; ſo that it ſhould not in any caſe be omitted.

In violent ſprains the pain is often ſo ſevere, as to induce quickneſs of pulſe and other ſymptoms of fever. In ſuch caſes, along with local blood-letting, it is ſometimes neceſſary to take blood from ſome of the larger veſſels. Opiates become neceſſary, together with all the remedies that prove uſeful in fevers ariſing from inflammation.

After blood has been freely evacuated from a ſprained part, the beſt application that can be uſed for ſome days at firſt, is a ſolution of ceruſſa acetata, and afterwards, for the removal of that thickened ſtate of the ligaments and tendons which often ſucceeds to ſprains, the pouring of warm water upon the part two or three times daily, for the ſpace of a quarter of an hour or ſo each time, proves often uſeful. Even common ſpring water frequently anſwers the purpoſe; but it ſeems to prove more penetrating when impregnated with ſea ſalt, or crude ſal ammoniac: We have likewiſe reaſon to think,

that the warm waters of Bath and Buxton are rendered more effectual in cafes of this kind, by the impregnations which they contain, than they otherwife would be.

Along with warm bathing, frictions with emollient applications prove fometimes ufeful in removing this thickening of the parts induced by fprains. But they require to be perfifted in for a confiderable time.

During the cure of a contufion or fprain, the injured part fhould be kept as much as poffible in an eafy pofture. In every inftance this fhould be attended to, but more efpecially when the pain is very fevere, an occurrence which probably depends on the fibres of fome of the fprained tendons being ruptured, and which nothing will cure fo readily as the limb in which it has happened being kept for a confiderable time in a relaxed eafy pofture.

We have already mentioned the warm bath as a remedy in fprains. In various cafes cold bathing alfo proves ferviceable.

After

After ſprains have been of ſome duration, the injured part is apt to continue weak and relaxed, even when the pain and ſwelling are gone. In this ſituation, cold water being poured upon the part from a height, or being ſuddenly daſhed upon it, and repeated once or twice daily, will prove more effectual in ſtrengthening the weakened limb than perhaps any other remedy. It is for the removal of debility only, however, that cold bathing ſhould be employed; and there is much reaſon to think that it has done miſchief when uſed in the more early ſtages of ſprains. While much thickening of the tendons and ligaments remains, and which often proves the moſt formidable, as well as the moſt obſtinate ſymptom which accompanies ſprains, a long continued uſe of cold bathing ſeems to do harm, by rendering the thickening more firm than it was before, while the contrary effect often reſults from a proper application of warm water.

A bandage or roller applied over the injured parts, as tight as the patient can

eaſily bear it, proves often uſeful in ſprains. By ſupporting the relaxed parts, it not only prevents pain, but the œdematous ſwellings alſo, to which ſprained limbs are often liable. The roller ſhould be of flannel, which yields more readily than linen to any variety in the ſize of the limb, while it ſerves as the moſt effectual preventative of thoſe rheumatic affections with which limbs that have ſuffered much from ſprains are liable to be attacked. The roller muſt be carried ſpirally upwards from the inferior part of the limb, with an equal preſſure on every part of it, in order to prevent œdema, which might otherwiſe take place.

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SECTION III.

Of Chronic or Indolent Tumors.

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§ 1. *General Remarks.*

THE general character of this claſs of tumors is, that they are ſlow in their progreſs, and not neceſſarily attended with inflammation. Tumors of every kind may eventually, indeed, induce inflammation: Thus, ſwellings which have long remained indolent, by an increaſe of bulk will often diſtend the ſkin ſo much as to become inflamed; and all the varieties of hernia, although not neceſſarily accompanied with inflammation, for they frequently take place without it, tend often to induce it, ſo reaſons

ſons too obvious to require being mentioned. But in theſe, we conſider inflammation as an accidental occurrence only, and in no way connected with the riſe or formation of the diſeaſe. Of the chronic tumors we ſhall firſt conſider thoſe that are encyſted.

§ 2. *Of Encyſted Tumors.*

Every tumor might be conſidered as encyſted, the contents of which are ſurrounded with a bag or cyſt, as is the caſe with every variety of hernia and hydrocele, as well as with ſome other tumors, but in common practice thoſe tumors only are termed Encyſted that are contained in cyſts of a preternatural formation. In common language, theſe, as well as various tumors of the ſarcomatous kind, are termed Wens.

The different parts of which an animal body is compoſed, are connected together by a common medium, termed the

Cellular

Cellular Subſtance; which is ſo univerſally diffuſed, that it ſeems to form a very conſiderable part of every fibre. In a ſtate of health the cells of this ſubſtance communicate with each other; and, like the large cavities of the body, they are kept ſoft and moiſt by a ſecretion conſtantly paſſing into them by the exhalents, and returning from them by the abſorbents. In ſome parts of the body this ſecretion would appear to be entirely of a ſerous nature; while in others it conſiſts evidently of oil or fat.

While the abſorption of this fluid is in proportion to the quantity exhaled, no accumulation takes place: But various cauſes may concur to deſtroy the equilibrium; and in whatever way this may happen, if more is ſecreted than is carried off by the abſorbents, a fulneſs or ſwelling muſt neceſſarily enſue. Where this ſuperabundance is of the ſerous kind, a dropſical ſwelling will be produced; when of an oily nature, obeſity or fatneſs will take place.

A general difpofition in the fyftem to this kind of accumulation is a frequent occurrence; but caufes fometimes occur by which collections are produced in particular parts. In a found ftate of the cellular fubftance, that natural communication we have mentioned as fubfifting between the different cells of which it is compofed, muft neceffarily prevent any partial or circumfcribed collection. And accordingly we know, that all ferous effufions very readily pafs from one part of this membrane to another. But this communication may be interrupted by inflammation as well as other caufes, and accumulation of this natural fluid may therefore take place in a particular part.

We thus account for the formation of encyfted tumors; to which different names have been applied, according to the confiftence and appearance of their contents. When of the confiftence of honey, the tumor is termed Meliceris: When of a foft cheefy confiftence, or refembling dough, it is termed an Atheroma; and Steatoma, when formed of fat.

But

But it is proper to remark, that various degrees of conſiſtence are obſerved in each of theſe. Thus the ſteatoma is ſometimes ſoft like butter, and at other times firm like ſuet: And the ſame kind of variety occurs in the contents of the atheroma and meliceris, which in ſome caſes are equal in firmneſs to new cheeſe, and in others not firmer than the thinneſt honey.

The matter forming ſteatomatous tumors, we conclude to be from the firſt of an oily or fatty nature; and that their different degrees of conſiſtence will depend upon the remora of their contents, and quantity of thinner parts of them that happen to be abſorbed. And I think it probable, that atheromatous and meliceous tumors are originally formed by a depoſition of ſerum, with perhaps a conſiderable proportion of coagulable lymph; and that the degrees of conſiſtence of which we find them, will depend upon various cauſes: Upon the particular quantity of coagulable lymph contained in them; upon

upon their being of longer or ſhorter continuance; and particularly, upon their having been inflamed or not; and upon the extent to which this inflammation may have proceeded.

For the moſt part, practitioners accuſtomed to this branch of buſineſs may be able to diſtinguiſh with ſufficient exactneſs the nature of theſe tumors before laying them open. Thus, in general, the ſteatoma is of a firm conſiſtence: It is commonly looſe, and rolls more readily than the others under the ſkin; and its ſurface is apt to be unequal: The atheroma is ſoft and compreſſible, but no fluctuation is obſerved in it: While, in the meliceris, the fluctuation of a fluid or thin matter is in general very diſtinctly perceived. It is proper, however, to remark, that neither theſe, nor any other means of diſtinction, will at all times prove ſufficient: For in ſome caſes the ſteatoma, inſtead of being firmer than the others, is conſiderably ſofter; inſomuch that I have met with different inſtances of the fat of which they are formed,

formed, fluctuating or moving between the fingers like thin purulent matter; and where accordingly the opinion that was previously formed of it was altogether erroneous. The atheroma and meliceris are sometimes combined in the same tumor: One part of it will be of a soft pultaceous nature, and contained in a separate cyst or cell, while the rest is perhaps of the same consistence with purulent matter. In a few cases too, the steatoma it conjoined with these; but this is not a frequent occurrence.

In judging of the nature of these tumors, some advantage may be derived from attending to their situation. Thus we observe, that in some parts of the body, fat is more apt to be deposited in the cellular substance than in others. In some parts indeed, fat is scarcely ever perceived in it; as is the case over a great part of the head; while in others, particularly over the prominent part of the abdomen, we commonly meet with it even in the leanest subjects. Now I believe

lieve it will be obſerved, that ſteatomatous tumours are ſeldom, if ever met with in thoſe parts of the body which are not uſually in a ſtate of health ſupplied with fat: At leaſt this has been ſo much the caſe in the courſe of my practice, that I have never met with an inſtance of it; and it tends much to confirm the idea which I have endeavoured to eſtabliſh of the formation of theſe tumors. The head, as I have obſerved, is very ſparingly ſupplied with fat, at the ſame time that we find it more liable than any part of the body to encyſted tumors; but theſe tumors are very univerſally of the atheromatous or melicerous kinds *. Nor have I ever met with the ſteatomatous tumor but where fat is uſually depoſited in the contiguous cellular ſubſtance. They

* By Atheromatous and Melicerous, I mean to expreſs different degrees of conſiſtence of a curdy pultacous matter. By ſome, the firmer kinds of this have been miſtaken for, and deſcribed as the contents of the ſteatomatous tumor; but they will be found to be in every reſpect different from the fatty ſubſtance contained in the real ſteatoma.

They are rarely indeed obferved on that part of the body which is moft plentifully fupplied with fat. We feldom meet with thefe or any other variety of encyfted tumor on the abdomen: and at firft view this may be confidered as an objection to our theory: On farther attention, however, it will rather appear to fupport it. The parietes of the abdomen being formed of foft yielding parts, with no bone or hard body beneath, we may readily fuppofe that they will fcarcely, if at all, be affected with preffure: So that this caufe of obftruction will not here have the fame effect as on the head and other parts where the cellular fubftance lies immediately above the bone.

All the tumors of the encyfted kind are fmall at firft, and increafe by flow degrees. They are of very different fhapes and fizes: In fome they refemble a walnut; on the head they are commonly round and fmooth, and do not often arrive at any great bulk; but in other parts of the body they are often of an irregu-

lar form, at the ſame time that they are more apt to acquire a greater ſize. I have met with ſteatomatous tumors weighing upwards of twenty pounds; and ſometimes they are double this weight. They are never at firſt attended with pain; and the ſkin for a conſiderable time retains its natural colour. But when by long duration they become large, the veins of the ſkin, as well as thoſe of the ſac, become large and varicoſe; and the prominent part of the tumor acquires a clear red colour, ſimilar to that which accompanies inflammation: But it ſeems to be different from this, as it is ſeldom attended with pain, unleſs when injured by external violence. A blow or bruiſe will readily indeed excite inflammation, by which the ſkin will become tender and painful, and will crack or burſt, if not prevented by the contents of the tumor being diſcharged by an operation.

This is the ordinary progreſs of theſe tumors: But it is proper to remark, that although they never advance quickly, yet

in ſome ſituations they terminate much ſooner, and arrive at a greater bulk than in others. Thus, in the head they do not uſually become bigger than a large egg. In a few caſes, indeed, they are larger; but for the moſt part they terminate before they acquire this ſize, by the teguments becoming tenſe and thin, and even burſting if not prevented in the manner we have mentioned. But on other parts of the body, particularly on the back, on the ſhoulders, and thighs, the teguments ſometimes retain their natural appearance long after a tumor has become very large. This ſeems to proceed from different degrees of laxity in the ſkin. In the head, the teguments are firm, and do not yield ſo readily to diſtention as in other parts of the body; by which any tumors lying beneath them muſt neceſſarily be more quickly brought to a period.

The ſituation of theſe tumors has likewiſe a conſiderable effect on the firmneſs with which they are attached to the contiguous parts. In ſome parts they are ſo

loofe and moveable, efpecially while they continue fmall, that they readily yield even to flight degrees of preffure: But in others, particularly where covered with any fibres of mufcles, they are apt to be firmly fixed from their commencement. The attachment of tumors is alfo influenced by their remaining more or lefs free of inflammation; for they never become inflamed, even in the flighteft manner, without fome degree of adhefion being produced between the cyfts and correfponding teguments.

In the treatment of encyfted tumors, we are directed by authors to attempt to cure them in the firft place by refolution; and if this fails, by extirpation. With a view to accomplifh a cure by refolution, frictions with mercurial ointments are recommended, together with gum-plafters, and a variety of other applications. No practitioner, however, of the prefent age, will depend upon this management; nor will he expect to be able to remove thefe tumors in any other manner than by the aid of furgery.

We

We ſhall therefore ſuppoſe that the removal of one of them by an operation is agreed upon: The next point to be determined is the mode of effecting it; and this in a great meaſure ſhould depend upon the contents of the ſac. If they appear to be of the thin melicerous kind, which for the moſt part will be the caſe if a diſtinct fluctuation is perceived through the whole body of the tumor, it ought to be treated like a common abſceſs. In ſmall collections, the matter may be diſcharged by laying the moſt depending part of the tumor open with a common lancet, and treating it in the ordinary way till it fills up or adheres from the bottom: But as in large ſwellings of this kind, the free admiſſion of air proves always hurtful, the opening ſhould be made in a manner the leaſt likely to be attended with this inconvenience. In a preceding part of this work, I have recommended the paſſing of a ſeton or cord through large abſceſſes as the beſt method of opening them; and as the ſame me-

thod may with equal propriety be employed in encyſted tumors formed by collections of thin matter, we ſhall now refer to what was then ſaid upon the ſubject *. I ſhall at preſent only obſerve, that the cord ſhould paſs through the whole extent of the tumor, from the ſuperior part of it to the moſt depending point; and that the inferior opening at which it paſſes out ſhould be ſufficiently large for admitting the matter to be freely diſcharged. In this manner I have had many inſtances of large encyſted tumors being healed with much more eaſe than almoſt ever happens under the ordinary method of treatment. Several years ago, I gave my opinion upon this point at conſiderable length; and farther experience of the advantages which reſult from it has tended much to confirm it †.

This method of cure, however, is only applicable where the contents of tumors are ſo thin as to be eaſily diſcharged

* *Vide* Chap. I.

† *Vide* Treatiſe on Ulcers, &c. Part I.

ged by a small opening. When too firm to admit of this, they must either be emptied by an extensive opening into the cyst, or the cyst with its contents must be dissected out.

Where a cyst containing matter adheres so firmly to the contiguous parts as to require much time to remove it by dissection, it should never be attempted. It will be sufficient to lay it freely open through its whole extent, and to remove any portions of it that may be loose. The contents of the tumor will in this manner be completely removed: And the cure may either be effected in the usual way, by preserving the wound open till it fills up with granulations from the bottom; or it may be attempted by drawing the divided edges of the skin together, and trusting to moderate pressure and the ordinary effects of inflammation for producing a complete reunion. I have succeeded in both ways; and I think it necessary to observe, that both are equally certain. To those accustomed to think

that it is neceſſary to remove the cyſts of theſe tumors entirely, it will at firſt appear to be unſafe to allow any part of them to remain: Many I know are of this opinion, but experience would ſoon convince them that it may be done with ſafety: When we reſolve, however, on removing the cyſt, it is better to open it by a longitudinal cut through the whole tumor than to remove it entire. When the cyſt is empty, it is more readily laid hold of with the fingers or forceps, and more eaſily diſſected out, than when the bag remains full and diſtended.

When the bag is thus removed, the teguments ſhould be laid together and retained with adheſive plaſters, or with two or three ſutures, as the operator may incline: And if an equal preſſure is made over the whole, a cure may thus is obtained by the firſt intention. In every part of the body this is an object of importance, as it tends to ſhorten the cure; but it is particularly proper in the face and other external parts of the body, where

where the cicatrix produced by a tedious ſore proves for the moſt part very unſeemly.

The arteries which ſupply the cyſts of theſe tumors are ſometimes ſo large as to pour out much blood when they are cut. In this caſe, they ſhould be immediately ſecured with ligatures: And if the threads are left of ſuch a length as to hang out at the lips of the wound, they prove no obſtacle to the cure being completed in the manner we have directed; for when applied with the tenaculum, as they ought to be, they may be drawn away with eaſe and ſafety at the end of the ſecond or third dreſſing. By an ill-timed caution, ſome practitioners, from an apprehenſion that ligatures in ſuch circumſtances may do harm, have adviſed that none of the arteries which appear in the removal of theſe tumors ſhould be tied. Nay, ſome have gone ſo far as to ſay, that it is ſeldom or never neceſſary to apply ligatures to ſuch arteries as are cut in the removal of ſcirrhous breaſts: But as I have known different

different inſtances of patients dying ſuddenly from loſs of blood where this precaution was neglected, and as I never met with a ſingle caſe of any harm being done by attending to it, I would adviſe every artery to be ſecured that does not ſtop immediately on being divided. Beſides the real danger to be expected from this being neglected, it is apt to fruſtrate our intention of healing the ſore without the formation of matter.—In the removal of cancerous breaſts, where the edges of the divided ſkin have been drawn together ſo as to cover the ſore, by the burſting of an artery which had not been ſecured, ſuch a quantity of blood has been effuſed between the teguments and parts beneath, as has either prevented them from uniting, or has rendered it neceſſary to remove the bandages, and to lay the parts again open in order to diſcover the bleeding veſſel. Of this I have met with ſuch a number of inſtances, that I am convinced every practitioner of experience muſt probably have done the ſame.

In tumors of an ordinary ſize, there is no neceſſity for removing any part of the ſkin. By a ſingle inciſion along the courſe of the tumor, in the manner I have directed, the ſac will either be laid ſufficiently open, or it may be removed with equal eaſe as if it were opened by a crucial inciſion; and although the ſkin may at firſt appear to be too extenſive, yet in the courſe of a ſhort time it will contract ſo as merely to cover the parts beneath. But in tumors that are extenſive, where the ſkin is ſo much diſtended as to give cauſe to imagine that it will be much puckered if part of it is not removed, ſome portion of it ſhould be taken away. This will be beſt effected by including in two ſemilunar cuts as much of the ſkin as ought to be removed; and this being done, the portion of ſkin thus ſeparated muſt be taken away along with the cyſt. In the ſame manner, when we are operating upon a tumor where the prominent part of the ſkin is either ulcerated, or rendered ſo thin by diſtention that we cannot with

propriety

propriety attempt to ſave it, ſuch parts of it as are thus affected ſhould be included between two ſemilunar cuts, and removed in the manner I have mentioned. In other reſpects, the cure muſt be conducted as if none of the ſkin were taken away, by drawing the divided edges of the teguments together, and endeavouring to make them unite by the firſt intention, in the manner I have adviſed.

Where tumors of this kind are ſo large as to render it proper to remove any part of the ſkin, we are deſired by ſome practitioners to do it with cauſtic; and by others cauſtic is uſed for opening every tumor. Cauſtic, however, ſhould never be employed where patients have reſolution to ſubmit to the uſe of the ſcalpel.

§ 3. *Of Ganglions.*

By the term Ganglion, we here mean an indolent moveable tumor which forms upon the tendons in different parts of the body,

body, but moſt frequently on the back part of the hand and joint of the wriſt.

Theſe tumors poſſeſs a conſiderable degree of elaſticity; by which they may in general be diſtinguiſhed from the encyſted tumors deſcribed in the laſt ſection. They ſeldom arrive at any great bulk; they are not often attended with pain; and for the moſt part the ſkin retains its natural appearance. On being laid open, they are found to contain a tough, viſcid, tranſparent fluid, reſembling the white of an egg.

It ſeldom happens that ganglinous tumors become ſo large as to render them the objects of ſurgery. On their firſt appearance, they may often be removed entirely, either by moderate friction frequently repeated, or gentle preſſure with thin plates of lead properly ſecured with a bandage. In this manner, they are more readily diſcuſſed than any other kind of ſwelling:. But neither the friction nor the preſſure ſhould be carried too far, otherwiſe the ſkin may be ſo much fretted

as to give riſe to inflammation; by which ſuppuration, and abſceſſes difficult to cure, may be induced.

When this method of removing a ganglion does not ſucceed, nothing farther ſhould be attempted while the tumor remains of a moderate ſize: But when it becomes ſo large as to prove troubleſome, either by impeding the motion of a joint, or in any other manner, it ought to be removed by exciſion, in the ſame manner as we have adviſed in the treatment of encyſted tumors when the cyſt is to be taken away; that is, by making a longitudinal cut through the teguments over the whole extent of the tumor; and after ſeparating the ſkin on each ſide, to diſſect it off from the tendon: Or, when it is found to adhere ſo firmly to the contiguous parts as to render this impracticable, an inciſion may be made into it of ſuch a depth as to diſcharge the contents of it, after which a cure may be effected by preſerving the wound open till it fills up with granulations from the bottom.

In

In general, practitioners are averſe to operate on theſe tumors, on the ſuppoſition of the wound being difficult to heal; but I have ſeldom known this to be the caſe.

§ 4. *Of Swellings of the Burſæ Mucoſæ.*

The burſæ mucoſæ are ſmall membranous bags ſeated upon, or very contiguous to the different large joints. They naturally contain a thin, tranſparent, gelatinous fluid, which ſeems to be intended for lubricating the parts upon which the tendons move that paſs over the joints. They are met with in other parts of the body, but chiefly about the hip-joint, the knee, ankle, ſhoulder, elbow, and wriſt *.

In a ſtate of health, the fluid contained in theſe burſæ or ſacs is in ſuch ſmall quantity

* The beſt account that has yet appeared of the ſituation and number of the Burſæ Mucoſæ, may be ſeen in a late publication upon this ſubject by Dr Alexander Monro of this Univerſity.

quantity, that it cannot be difcovered till they are laid open by diffection: But in fome cafes it accumulates to fuch an extent as to produce tumors of confiderable bulk. This is not an unfrequent effect of contufions and fprains; and I have often met with it as a confequence of rheumatifm. The fwelling is feldom attended with much pain: It yields to preffure, but is more elaftic than where ordinary matter is contained: At firft it is always confined to one part of the joint; but in fome cafes the quantity of accumulating fluid becomes fo confiderable as nearly to furround the joint.—The fkin always retains its natural appearance, unlefs attacked with inflammation.

The contents of thefe tumors are found to be of different kinds, and this feems to depend on the caufe by which the fwelling is produced; a circumftance which merits particular attention. Thus when the tumor is induced by rheumatifm, the contents of the fac are commonly thin and altogether fluid, refembling the fynovia

of the different joints; at leaſt this has been the caſe in any of thoſe which I have known opened: While in ſuch as proceed from ſprains, we uſually find, mixed with this tranſparent fluid, a conſiderable quantity of ſmall elaſtic concretions. In a few caſes I have met with theſe concretions of a ſoft texture, ſo as to be eaſily compreſſed between the fingers; but in general they are too firm to admit of this. We may commonly, however, judge of this, even before the tumor is opened, by the kind of fluctuation that takes place. When the concretions are ſoft, the fluctuation is uſually diſtinct; but when they are firm, it is not ſo clearly perceived, and they are eaſily felt beneath the fingers on being preſſed from one part of the ſac to another.

In practice it will be found to be an object of importance, our being able to diſtinguiſh between thoſe collections which proceed from rheumatiſm, and ſuch as are the conſequences of old ſprains: For in the former, I believe, it will be ſeldom

neceſſary to propoſe any operation; as in moſt inſtances, perhaps in all, the ſwelling will at laſt diſappear, merely by keeping the parts warm with flannel; by frequent frictions; by warm water being frequently pumped upon them; or by the application of bliſters. At leaſt this has happened in almoſt every rheumatic caſe of this kind in which I have been concerned.—But in thoſe ſwellings of the burſæ mucoſæ, which originate from ſprains, although the quantity of effuſed fluid may remain ſtationary, or may even leſſen in quantity, it will ſeldom, if ever, diſappear entirely. In ſuch caſes, therefore, when the tumor arrives at ſuch a ſize as to prove troubleſome, we are under the neceſſity of propoſing an operation for removing it.

The only operation that is admiſſible, is the opening the ſac, ſo as to diſcharge the matter contained in it, and to preſerve the wound open till it fills up with granulations from the bottom. In moſt ſituations this may be done with ſafety; but

but in ſome parts, particularly about the joint of the wriſt, theſe collections are ſo covered with tendons that the greateſt caution is required in every operation of this kind. When the contiguity of tendons prevents the ſac from being opened to ſuch an extent as may probably enſure a cure, it will be better to lay it open at each end; and after preſſing out the contents, to paſs a ſmall ſeton or cord from one opening to the other. In this manner a ſlight degree of inflammation will be excited on the inſide of the ſac, when the cord may be withdrawn, ſo as to admit of a cure being attempted by gentle preſſure, applied with a roller over the courſe of the tumor. I have ſometimes ſucceeded in this way, when a cure could not be obtained by any other means; and when the cord is cautiouſly introduced with a blunt probe, no harm occurs from it, even when it paſſes beneath ſome of the tendons. The cord, however, ſhould not be continued ſo long as to induce much pain or inflammation; for in the

 neighbourhood

neighbourhood of large joints this might prove alarming: And we know from experience, that even a ſlight degree of inflammation anſwers the purpoſe ſufficiently.

A good deal of ſtiffneſs commonly remains upon that part of the joint where the tumor was ſituated. The moſt effectual remedy for this, is frequent frictions with emollients, and a proper application of warm ſteams to the part affected.

§ 5. *Of Collections within the Capſular Ligaments of Joints.*

Collections of various kinds are met with in the capſular ligaments of joints. Blood may be effuſed within them. Inflammation is here, as in other parts, frequently ſucceeded by the formation of matter; and ſerous effuſions occur in them, forming what are commonly termed Dropſical Swellings of the joints.

These

These ſwellings ſhould be diſtinguiſhed with preciſion from others which they reſemble. They are moſt apt to be confounded with collections in the burſæ mucoſæ, or matter effuſed in the cellular ſubſtance covering the joints. From the firſt of theſe they may in general be diſtinguiſhed, by the contained fluid paſſing with freedom from one ſide of the joint to the other; and from its being diffuſed over the whole of it: Whereas, when contained in one of the burſæ, the tumor is more circumſcribed; being for the moſt part fixed above or upon one ſide of the joint. Collections of matter in the burſæ mucoſæ are ſeldom painful, while every tumor ſeated within the capſular ligaments of joints is apt to excite violent degrees of pain.

They are more eaſily diſtinguiſhed from matter collected in the cellular ſubſtance covering the joints. In the laſt, the collection is evidently ſuperficial; and it is not ſo much confined to the joint itſelf, being in general found to extend in every

direction farther than the boundaries of the capſular ligaments.

We judge of the nature of the fluid collected in theſe ſwellings by the circumſtances which have preceded them, as well as by the ſymptoms with which they are accompanied. When a violent bruiſe of a joint is immediately ſucceeded by a large effuſion within the capſular ligament, it will probably be found to conſiſt chiefly of blood. This is not a frequent occurrence; but as I have now met with it in two inſtances, I conclude that it may happen in others.

When inflammation of a joint terminates in effuſion within the capſular ligament, there will be reaſon to imagine that the matter forming the tumor is of a thin ſerous kind, with ſome tendency to purulency: For well-conditioned pus is ſeldom met with in ligamentous or membranous parts. And laſtly, when collections within the capſular ligaments ſucceed to rheumatic affections, there will be much reaſon to ſuppoſe that they are entirely ſerous;

ſerous; for we know from obſervation, hat effuſions which take place in rheu-atiſm are very commonly of this kind.

The importance of our being able to ſcertain the kind of matter contained in heſe ſwellings, becomes obvious from the difference of practice which they require: As the making an opening into a large joint is always hazardous, from the pain and inflammation which it is apt to excite, it ſhould never be attempted but from neceſſity. One of the cauſes, in general, ſuppoſed to require it, is matter collected within the capſular ligaments: But when by experience we diſcover that a particular kind of matter may be allowed to collect in this ſituation without any detriment, we rather allow it to remain, than incur the riſk which might enſue from letting it out. Now this is uniformly the caſe with thoſe effuſions which ſucceed to rheumatiſm. Whether collected in the burſæ mucoſæ, as mentioned in the preceding article, or within the capſular ligament of a joint, they ſhould never be laid open.

Of whatever ſize they may be, they will very commonly be diſcuſſed by the remedies we have mentioned, namely, by frictions; the pouring of warm water upon the parts affected; proper covering with flannel; and the uſe of bliſters; or, when theſe fail, ſupporting the tumefied parts with a laced ſtocking, or a roller, will often prove ſucceſsful. But whether we are able to diſſipate the ſwelling entirely or not, when we are convinced that it is of the rheumatic kind, no opening ſhould be made into it. The patient may continue to complain of ſome uneaſineſs and ſtiffneſs in the joint, but this will be trifling when compared with the pain and inflammation which may occur from laying it open. But when matter is collected in the cavities of joints, which may do miſchief by lodging, or which does not readily admit of abſorption, an opening ſhould be made for diſcharging it. The matter which forms in conſequence of high degrees of inflammation, and effuſed blood,

blood, are of this kind. Blood is frequently extravaſated among ſoft parts without much detriment; but when in contact with cartilage or bone, it ſoon hurts them materially; and the ſame effect follows from the lodgment of matter formed by inflammation.

The danger accruing from this operation ſeems to depend in a great meaſure upon air finding admiſſion to the cavity of the joint, which ought therefore to be as much as poſſible guarded againſt. For this purpoſe the opening ſhould be made with a trocar; and if the ſkin is previouſly drawn tight to the upper part of the tumor, by pulling it down immediately on withdrawing the canula after all the fluid is evacuated, the riſk of air being admitted will thus be leſſened. A piece of adheſive plaſter ſhould be directly laid over the opening in the ſkin; and the whole joint ſhould be firmly ſupported, either with a laced ſtocking, or a flannel roller properly applied round it.

As

As a farther preventative of bad confequences from this operation, if the patient is plethoric, he fhould be blooded to fuch an extent as his ftrength will bear: He fhould be put upon a ftrict antiphlogiftic regimen; and in every refpect fhould be managed with caution: For inflammation being very apt to enfue from it, we cannot be too much on our guard againft it.

§ 6. *Of Concretions and preternatural Excrefcences within the Capfular Ligaments of Joints.*

WE fometimes find joints become painful, and their motion much impeded, by the preternatural formation of fubftances within the capfular ligaments. In fome thefe bodies are fmall and loofe, and of a firmnefs equal to that of cartilage; and in others they are of a foft membranous nature, fprouting from an eroded furface of one of the bones forming the joint, or

or from the inner ſurface of the capſular ligament.

In ſome caſes, they remain fixed, or nearly ſo, without being much affected either by preſſure or the motion of the joint: This is particularly the caſe in thoſe that are ſoft and membranous, which are in ſome degree fixed by their attachments. But the others, which have nearly the firmneſs of cartilage, are commonly ſo moveable, that their ſituation is altered by every motion of the limb; and they ſlip ſo eaſily on being touched, that it is difficult to fix them even with the fingers.

In the former, which remain fixed nearly to the ſame ſituation, the pain is conſtant, but ſeldom ſevere; whereas in the latter, it is only felt in particular ſituations, chiefly I ſuppoſe when the connecting membrane paſſes between the ends of the bones: But in theſe caſes it proves often ſo ſevere as to be altogether inſupportable. I have known different inſtances of this, where in certain poſtures

of

of the leg, for it is in the knee in which theſe concretions ſeem chiefly to occur, the pain became ſuddenly ſo exquiſite as to induce fainting. And where this returns frequently, the patient is ſo much afraid of it, that he inclines rather to avoid walking almoſt entirely than incur the riſk of inducing it. Nay, in ſome caſes, I have known the patient rouſed from the moſt profound ſleep, by the limb being merely moved when in bed.

As theſe ſubſtances are of a nature that will probably for ever reſiſt the power of medicine, and as they can only be removed by the joint being laid open, the queſtion to be determined is, Whether this ought to be attempted or not? Many ſpeak of this as an operation of ſo little hazard, that practitioners are apt to adviſe it in all caſes where the pain induced by the diſeaſe is ſevere. In two caſes, indeed, which fell under my own management, the joints of the knee were laid open; the foreign bodies were removed; and the wounds healed almoſt

with

with the ſame eaſe, as might have been expected in ſimilar injuries in any other part. But ſince that period, different inſtances have occurred where this operation induced the moſt alarming ſymptoms; and even terminated in ſuch a manner as to render it neceſſary to amputate the limb. I never obſerved indeed ſuch high degrees of inflammation from any other cauſe; neither is it confined to the joint itſelf. The whole limb, both above and below the wound, becomes ſtiff and ſwelled in a remarkable degree, with painful inflammatory tenſion, extending from one end of it to the other.

The uncertain ſucceſs of this operation may make us doubtful in every inſtance of adviſing it. The following is the opinion I have formed of it, drawn from a good deal of experience in caſes of this kind. Where concretions formed within the capſular ligaments of joints, appear, upon examination with the fingers, to be looſe and detached, if the pain which they excite is ſevere, rather than ſubmit

to

to this, we ſhould venture in a cautious manner to take them out, by making an inciſion into the joint: But wherever there is reaſon to ſuſpect that the concretions are connected with any part of the joint, the patient ſhould rather be adviſed to ſubmit to the pain which they induce, and which in general will be rendered moderate by avoiding exerciſe, than to run the riſk attending this operation.

The pain indeed, even in a retired life, may become inſupportable. In this caſe I would adviſe the amputation of the limb. The remedy is no doubt ſevere; but it is leſs painful, as well as leſs hazardous, than the exciſion of any of thoſe concretions when attached to the capſular ligaments.

The opening into the capſular ligament for the removal of theſe looſe bodies, may be made in the following manner: If in the joint of the knee or ankle, the patient ſhould be laid upon a table or on a bed; but if any of the joints of the arm are to be opened, he may be allowed

to

to ſit; only, in whatever poſture he may be, the limb ſhould be ſecured in the firmeſt manner by aſſiſtants, in that poſture which admits of the body to be taken out being felt in the moſt diſtinct manner. On this being done, the ſurgeon ſhould endeavour to fix it with his left hand towards the upper part of the joint, after an aſſiſtant has been deſired to draw the ſkin as much as poſſible upwards from the part where the inciſion is intended to be made. The ſurgeon, with a ſcalpel in his right hand, is now to make an inciſion through the teguments and capſular ligament, directly upon the ſubſtance itſelf, of ſuch a ſize as will admit of its being eaſily taken out; which will be eaſieſt done by the end of a blunt probe being paſſed beneath it. If it is found to be connected by ſmall filaments, either to the capſular ligament or cartilages of the joint, they ſhould be cautiouſly divided, either with a probe-pointed biſtoury or ſciſſars, after drawing the ſubſtance itſelf as far out as it can be got, with ſmall forceps,

ceps, or with a ſharp hook when of a texture that admits of a hook being puſhed into it. When there are more concretions than one, they ſhould all be taken out at the ſame opening when this can be done: But when they lie on oppoſite ſides of the joint, two openings will be neceſſary; only in this caſe, it will be better to allow the firſt inciſion to heal before attempting the ſecond, ſo as to avoid as much as poſſible the riſk of exciting inflammation.

After the concretions are removed, the ſkin ſhould be immediately drawn over the wouud in the capſular ligament; and the lips of the opening in the ſkin being laid together, they ſhould be ſecured in this ſituation by pieces of adheſive plaſter, ſo as to prevent the air from finding acceſs to the cavity of the joint. Till the wound is completely healed, the patient ſhould not only be confined to bed, but the limb ſhould be kept as much as poſſible in one poſture; and a ſtrict antiphlogiſtic regimen ſhould be obſerved.

 But

But for the farther management of ſuch caſes, and of the ſymptoms with which they are apt to be attended, we muſt refer to Chap. III. Section VIII. when treating of Wounds in the Ligaments.

I have mentioned, that the inciſion into the capſular ligament, ſhould be made at the upper part of the joint. The intention of this is to prevent the ſynovia, after the ſkin is drawn over the opening in the ligament, from finding ſuch ready acceſs as it otherwiſe would do to lodge in the cellular membrane immediately beneath the ſkin; a precaution that is eaſily obſerved, and from which ſome advantage may be derived.

§ 7. *Of Anaſarca or Oedema.*

The terms Anaſarca and Oedema are applied to that variety of dropſical ſwelling where the water is collected, not in any diſtinct cavity, but in the cellular ſubſtance. The part is generally cold, and

of a pale colour; and being poſſeſſed of little or no elaſticity, it retains the mark of the finger when preſſed upon.

Swellings of this kind are for the moſt part connected with ſome general affection of the ſyſtem; but in ſome caſes they occur in particular parts, from cauſes which affect theſe parts only. Thus, legs or arms which have been much weakened by contuſions or ſprains are apt to become œdematous. Tumors preſſing upon any of the larger lymphatics are apt to induce them. And they ſometimes occur from the lymphatics of a limb being cut, either by accident or in chirurgical operations.

In the treatment of theſe ſwellings, the circumſtance of their being general or local requires particular attention. When induced by tumors preſſing upon the lymphatics, the removal of theſe tumors alone will accompliſh a cure: And when they occur as the effect of weakneſs from ſprains or contuſions, the beſt method of cure is to ſupport the weakened parts either with a laced

laced ſtocking or a flannel roller, to prevent their yielding to diſtention, till in courſe of time, and by the effects of cold bathing and moderate frictions, they recover their natural tone.

But in thoſe anaſarcous ſwellings of the feet and legs which take place as a ſymptom of general dropſy, we muſt not venture upon removing or preventing them by compreſſion; for if the ſerum is prevented from falling down to the legs, it will be apt to fix upon parts of more importance. In theſe caſes, we truſt to the general tendency in the ſyſtem being removed by medicines, for a complete cure: But when the ſwelling is conſiderable, we have it in our power to procure temporary relief, by making ſmall punctures through the ſkin into the cellular membrane, in the moſt prominent part of it. The relief which this procures is commonly conſiderable, and it ought to be adviſed more early in the diſeaſe than is commonly done; for beſides the preſent eaſe which it affords, it prevents that loſs

of tone which the cellular ſubſtance ſuf-fers when anaſarcous ſwellings are per-mitted to go to ſuch a height as they of-ten do.

Inſtead of punctures, inciſions are uſu-ally employed; but ſmall punctures made with the point of a lancet anſwer better: They give a ſufficient vent to the water, at the ſame time that they are not ſo apt to inflame and mortify. But as we ſhall have occaſion to ſpeak of this when treat-ing of the Anaſarcous Hydrocele in Chap. X. Section II. we ſhall now refer to that part of our ſubject.

Where the ſwelling is induced by any of the lymphatic veſſels of a limb being cut, as ſometimes happens in extirpating indurated glands from the arm-pit, ſmall punctures made in the under part of the limb afford immediate relief; while little advantage is derived from bliſters or any other remedy.

§ 8.

§ 8. *Of the Spina Bifida.*

THE term Spina Bifida is applied to thoſe ſoft ſwellings which ſometimes appear in the courſe of the ſpine in new-born children, moſt frequently at the inferior part of it, between the two laſt vertebræ of the loins. A fluctuation is diſtinctly perceived in them: And the fluid which they contain can in ſome meaſure be preſſed in at an opening which takes place between the ſpinous proceſſes of the two vertebræ on which they are ſeated. In ſome caſes this opening is found on diſſection to proceed from a natural deficiency of bone; in others, from the ſpinous proceſſes of the vertebræ being merely ſeparated from each other: In all of them, the tumor is produced by ſerum collected within the natural coverings of the ſpinal marrow. In a few caſes this diſeaſe is connected with hydrocephalus; but this is not common. For the moſt part it is a local affection.

This is perhaps one of the moſt fatal diſeaſes to which infancy is liable; for as yet no remedy has been diſcovered for it. In ſome caſes, however, children labouring under it have lived for two or three years; but in general they linger and die in the ſpace of a few months. All the aſſiſtance that art has hitherto been able to afford, is to ſupport the tumor by gentle preſſure with a proper bandage. In this manner it has for ſome time been prevented from increaſing, by which life has been protracted; but this is all that we have yet been able to do.

It has ſometimes happened, where the nature of theſe tumors has not been underſtood, that they have been laid open with a view to diſcharge the fluid contained in them. Experience ſhows, however, that every attempt of this kind ſhould be avoided; for hitherto the practice has uniformly proved unſucceſsful. The patient has either died ſuddenly, or in the courſe of a few hours after the operation.

If

If conjecture may at any time be indulged, and propofals for innovation mentioned, it muft furely be allowable in cafes hopelefs as the one we are now confidering. If the fwelling in the fpina bifida is produced by real difeafe fubfifting in the veffels of the fpinal marrow, or in thofe of its membranes, it is not probable that any remedy will remove it: But if the opening between the fpinous proceffes of the vertebræ with which it is always accompanied, be not the *effect* of the difeafe, as is commonly imagined, and if the want of fupport, which this deficiency of bone muft create to the membranes of the fpinal marrow, be the *caufe* of ferous effufions within thefe membranes, might not fome advantage be derived from applying a ligature round the bafe of the tumor, not merely with a view to remove it, but alfo to draw the bottom of the cyft fo clofely together, that it may act as a proper fupport to the parts beneath? Whether any benefit may be derived from it or not, is no doubt very uncer-

 tain:

tain: But in a diſeaſe which we know will otherwiſe terminate fatally, we are warranted in propoſing whatever can afford even the ſmalleſt chance of ſafety; ſo that I mean to attempt it in the firſt caſe of this kind that falls under my care. After applying a ligature as cloſely as poſſible to the baſe of the tumor, and as ſoon as the tumor itſelf has fallen off, I would propoſe to apply a firm-ſtuffed pad, ſimilar to that of a rupture-truſs, to the opening between the vertebræ; and by means of a proper bandage, to ſecure it with ſuch a degree of tightneſs as may ſerve to ſupport the parts within.

Whether or not this method may in any inſtance accompliſh a cure, is very uncertain; but it appears to be the moſt probable way of prolonging life: For wherever the tumor has been opened, death ſeems to have enſued more from the removal of ſupport from the contained parts than from any other cauſe. Now, no method of treatment we could

advиſe

advise would so readily compress the parts within, and at the same time remove the tumor.

The tumor termed Spina Bifida occurs, as we have already observed, in different parts of the spine; but a swelling of perhaps the same nature is sometimes met with on different parts of the head. A tumor is observed at birth; and on examination it is found to be formed by a fluid lodged beneath the membranes of the brain, which have been forced out at some unossified part of the skull. In some cases the swelling remains stationary for a great length of time; but for the most part it becomes quickly larger, and at last terminates in death. Hitherto the same effect has resulted from laying this kind of tumor open, as we have mentioned in spina bifida.—The patient has commonly died in a few hours after the operation.

§ 9.

§ 9. *Of Scrophulous Tumors.*

The point firſt to be determined in the chirurgical treatment of ſcrophulous tumors is, Whether or not we ſhould endeavour to forward their maturation, by means of poultices and other external applications? For a conſiderable time, I adopted this practice in the freeſt manner, and applied warm poultices and fomentations to every tumor of this kind, till I was at laſt convinced by experience of its inefficacy. Nay, I now think, that it does harm: For ſcrophulous tumors being formed of matter not convertible into pus, poultices and other warm applications have little effect in bringing them forward; and when long uſed, they weaken and relax the parts ſo much, that the ſores which enſue are more difficult of cure than when poultices are not employed. In all ſcrophulous ſores, the parts are apt to remain long ſoft and ſpongy, by which they are prevented from healing. The

effect of theſe emollient applications, is to increaſe this tendency to ſoftneſs to a degree which often proves prejudicial.

As I know of no application which in the real ſcrophulous tumor ever proves uſeful, either in retarding its progreſs or in bringing it forward, I now adviſe even every covering to be laid aſide, unleſs the patient wiſhes to prevent the ſwelling from being ſeen; in which caſe he is deſired to cover it in the manner that is moſt agreeable to himſelf. But as I do not obſerve that expoſure to the air does harm, and as in ſome caſes I have thought that this expoſure of the tumor renders the ſubſequent ſores more eaſily cured, I would prefer this mode of treatment whenever it can be adopted. Even the external application of hemlock, which in the form of poultices is often adviſed in ſcrophulous tumors as a diſcutient, ſhould be laid aſide. In ſcrophulous ſores, I have obſerved ſome advantage derived both from the internal exhibition and outward application of hemlock: But although I have often

known

known it uſed in tumors of this kind, I cannot ſay that any advantage ever accrued from it. The only remedy I have ever known to act with any apparent efficacy in the diſcuſſion of ſcrophulous tumors, is a long continued uſe of the cold bath, and mineral waters, eſpecially thoſe of Moffat: But in order to produce any effect, they ſhould be entered upon early in the diſeaſe, while the tumors are ſmall, and long perſiſted in. As ſoon indeed as a patient is attacked with ſcrophula, I would adviſe him to enter upon the uſe of theſe remedies, and to perſevere for ſeveral years in applying them. In what manner the drinking of mineral waters, and of ſea-water, operates in preventing the formation of tumors in ſcrophulous patients, will be difficult to determine: But it ſeems to be probable, that cold bathing, particularly in ſalt water, proves chiefly uſeful by invigorating the ſyſtem at large, and particularly the lymphatic ſyſtem, which in ſcrophula appears to be remarkably weak and relaxed.

Of

Of late a new tonic remedy has come into notice, Muriated Barytes, and it ſeems to act with advantage in the diſcuſſion of ſcrophulous tumors. I am at preſent uſing it in upwards of twenty caſes of ſcrophula, but as yet I cannot poſitively ſay to what degree of credit it is entitled. It excites appetite; ſtrengthens the conſtitution; and in ſome inſtances both ſcrophulous tumors and ſores, which previouſly reſiſted all other remedies, have diſappeared while patients were uſing it. This medicine was firſt recommended by the ingenious Dr Crawford of London. It is prepared by diſſolving aerated barytes in the muriatic acid; evaporating the ſolution, and diſſolving the cryſtals in water. Of the ſaturated ſolution ſix or ſeven drops are given at firſt to an adult, repeated three times a-day, and the doſe gradually increaſed to thirty or forty drops, till it excites ſickneſs or nauſea, by adding two drops or ſo every ſecond or third day to each.

The next point of importance in the treatment of ſcrophulous tumors, is, Whether

ther they ſhould be opened, or allowed to burſt of themſelves? This ſhould, in a great meaſure, be determined by their ſituation. When ſeated upon any of the large joints, or on the cavities of the thorax or abdomen, the matter ſhould be diſcharged as ſoon as it is diſcovered, by a free opening with a lancet or ſcalpel; or in large collections, where it would prove hurtful to expoſe the cavity of an extenſive abſceſs to the air, it may be done with more ſafety with a trocar, or with a ſeton. But where ſcrophulous tumors are ſo ſituated that no harm can ariſe from the matter being allowed to remain, it is better that they ſhould break of themſelves: For even when managed in the moſt judicious manner, the ſores which enſue prove often tedious and difficult of cure, while an unſeemly ſcar takes place, whether the tumor has been opened or not; and the patient and his friends, from ignorance of the nature of the diſeaſe, as well as from other motives, are apt to blame any opening that is made, as the

cauſe

caufe either of a tedious cure, or of difagreeable marks. As an additional reafon for this practice, I believe it will be found, that fores enfuing from fcrophulous tumors will for the moft part heal more kindly when allowed to burft than when opened in any way whatever.

I have only to obferve farther, that tumors of a fcrophulous nature are occafionally met with, which from inadvertency are fometimes miftaken for thofe of a real fchirrous kind. I alfo believe that miftakes of this kind have tended to raife the reputation of medicines, particularly of cicuta, and that they have been the caufe of tumors being extirpated, which ought not to have been touched. When fcrophulous tumors are deeply feated, they have commonly a degree of firmnefs which they do not poffefs in the more external parts; and when in a fufpicious fituation, as in the glandular part of a woman's breaft, they are apt to be miftaken on a flight examination for fwellings of the fchirrous kind. Thefe miftakes, however, may always with

with ordinary attention be avoided. Even the firmeſt kind of ſcrophulous tumors are ſoft and compreſſible when compared with ſchirrus. They are of an equal, ſmooth ſurface; they are ſeldom in their early ſtages attended with pain; and for the moſt part ſimilar affections appear in other parts of the body; whereas the real ſchirrous tumor is always ſomewhat unequal or knotty, and although it does not for a conſiderable time become uniformly painful, a ſtinging diſagreeable pain is commonly felt in it from time to time, even from its firſt appearance; and it is not neceſſarily connected with ſymptoms of ſcrophula.

§ 10. *On White Swellings of the Joints.*

Few diſeaſes prove either of worſe conſequences to patients, or are leſs underſtood by practitioners, than white ſwellings of the joints: Inſomuch that, when completely formed, the diſeaſe may in almoſt

most every instance be considered as incurable.

White swelling may be defined a painful enlargement of a joint, not attended with external inflammation; but there are evidently two varieties of the disease, which it is of much importance to distinguish: The one connected with rheumatism, and the other with scrophula. I shall first describe the symptoms and appearances of each, and afterwards the method of treatment which hitherto has proved most successful.

The rheumatic white swelling begins with acute pain over the whole diseased joint and contiguous parts; and the pain is always increased by pressure or motion. As a relaxed posture gives relief, the limb is kept constantly bent, by which the flexor tendons become so stiff and immoveable, that from this cause alone the motion of the limb is often irretrievably lost.

If the disease is not soon carried off, the swelling, which at first is always inconsiderable, begins gradually to aug-

ment, and goes on till it ſometimes increaſes to twice the natural ſize of the part.

The cuticular veins become turgid and varicoſe; the limb below the ſwelling decays conſiderably in its muſcular ſubſtance, while it frequently acquires an equal or greater bulk by becoming œdematous: The pain turns more intolerable, eſpecially when the patient is warm in bed, or is otherwiſe heated; and abſceſſes form in different parts of the ſwelling, and run in various directions and at different depths.

In all theſe abſceſſes, the fluctuation of a fluid is generally evident; but beſides this they are ſpringy or elaſtic; yielding to preſſure, at the ſame time that they do not, like œdematous ſwellings, retain the mark, but inſtantly riſe again as ſoon as the preſſure is removed.

Theſe different collections, either upon breaking of themſelves, or on being laid open, diſcharge conſiderable quantities of a purulent like matter. This, however, ſoon degenerates into a thin, ill-digeſted ſanies;

sanies; and has never, at least in proportion to the quantity discharged, any influence in reducing the size of the swelling, which still remains nearly as large as before.

If the orifices from whence this matter flows are not kept open, they soon heal up; and new collections forming in different parts, again break out and heal as before: So that, in course of time, the whole surrounding teguments are found covered with cicatrices that remain after these ulcers.

Long before the disease has arrived at this state, the patient's health has suffered considerably: first, from the violence of the pain, which is often so great, as to destroy entirely both sleep and appetite; and then, from the absorption of matter which takes place in some degree from the time of its first formation; but which does not indeed appear so evidently, till the abscesses in which it is contained are either laid open by incision, or burst of themselves. When this takes place, the

pulſe becomes quick, accompanied with nocturnal ſweats and a coliquitive diarrhœa, by which the patient is at laſt carried off, if the member is not ſoon amputated.

Theſe are the uſual ſymptoms of the rheumatic white ſwelling; but before proceeding farther, I think it right to deſcribe the appearances which the parts exhibit on diſſection, and which I am enabled to do, from many opportunities of being acquainted with them having fallen within my obſervation.

When the limb is amputated early, the only preternatural appearance that we meet with on laying the parts open, is a morbid thickneſs of the ſurrounding ligaments, accompanied with a contracted ſtate of the flexor muſcles of the limb, but without any diſeaſe of the joint itſelf. The bones and cartilages remain ſound, and the ſynovia in a natural condition, both in quantity and conſiſtence.

This thickening of the ligaments is in general in proportion to the duration of the

the complaint. This, however, is not always the cafe; for I have met with fome recent inftances, in which the ligaments were more difeafed, than in others where the difeafe had continued longer. In this cafe indeed the previous fymptoms had been always violent.

In the more advanced ftages of the difeafe, when abfceffes have formed in different parts; when the pain has been long violent, and the fwelling confiderable, on laying the parts open, the thickening of the ligaments is ftill more remarkable, and is generally attended with an effufion into the furrounding cellular fubftance, of a thick glairy matter, which appears to be the caufe of that elafticity peculiar to fuch fwellings, formerly taken notice of in the defcription.

The different abfceffes or collections of matter are found to run in various directions through this glairy albuminous congeftion, without, however, feeming to mix with it. In fome few inftances, again, together with collections of pus, we meet

with a number of ſmall hydatides; and in the farther progreſs of the diſeaſe, all theſe together form ſuch a confuſed maſs of different matters and ſubſtances, that it is almoſt impoſſible, by diſſection, to procure a diſtinct view of them.

Even all theſe appearances I have met with, without any affection of the bones of the joint; which, together with the ſurrounding cartilages, upon cutting through the capſular ligaments, have remained perfectly ſound.

When, however, by a long continuance of the diſeaſe, theſe ligaments are eroded by the matter reſting upon them, both the cartilages and bones are ſoon brought to ſuffer; the latter becoming carious, as ſoon as the former, by the acrimony of the matter, have been abraded.

The tendons of the flexor muſcles do not, upon diſſection, exhibit any morbid appearances, either with reſpect to hardneſs or enlargement, but the muſcles from whence they proceed are always hard and contracted.

We

We ſhall now, as was propoſed, give a deſcription of the ſcrophulous white ſwelling.

In this variety of the diſeaſe, the pain is generally more acute than in the other; and, inſtead of being diffuſed, it is more confined to a particular ſpot, moſt frequently to the middle of the joint. In ſome inſtances I have known the patients ſay, even in advanced ſtages of the diſeaſe, that they could cover the whole pained part with a cr wn-piece, or leſs.

The ſwelling is always at firſt inconſiderable; inſomuch that, in ſome caſes, it requires attention to diſcover the difference between the diſeaſed joint and oppoſite ſound one. We always find, however, on meaſurement, that it exceeds the other from half an inch to an inch in circumference.

In this, as in the rheumatic white ſwelling, the leaſt degree of motion always excites pain; the joint is therefore always kept in a bent poſition, by which the flexor muſcles and tendons become ſtiff and contracted.

On the ſwelling continuing to advance, the pain becomes more violent, and the ſwelling more conſiderable, accompanied with an evident enlargement of the ends of the bones forming the joint.

In proceſs of time, the whole circumference of the tumor becomes elaſtic; varicoſe veins appear over its ſurface; and collections of matter occur in different parts of it: Theſe, upon burſting, or on being laid open, diſcharge large quantities of thin ill-digeſted matter; and if a probe is introduced, and paſſed to the bottom of the ſores, the bones are found carious, and pieces of them are afterwards diſcharged at the openings.

On the farther continuance of the diſeaſe, the conſtitution becomes injured; and the patient is at laſt carried off by diarrhœa and profuſe night-ſweats, ſymptoms which commonly indicate extreme degrees of weakneſs.

When joints affected in this manner are diſſected, either after death, or after amputation of the member in the firſt ſta-

ges of the diseafe, the soft parts seem not to be much injured, but in all, even the slightest that I have seen, the whole ends of the bones, or their epiphyses, are enlarged. In some this enlargement of the bones is confined to one side of the joint, but in others it appears equally in both: In some, this occurs without any other mark of disease, but in general the soft spongy parts of these bones are dissolved into a thin fetid matter, in some cases even without the cartilages which surround them being affected: This I have in different instances seen, although the cartilages for the most part are also found dissolved at last. The same thickening of the ligaments, and effusion of viscid glairy matter is met with here that occurs in the other variety of the disease.

The most frequent cause of white swelling is a previous disposition to rheumatism or scrophula; for although often induced by external violence, particularly by sprains and bruises, the disease seldom proves

proves obſtinate where the rheumatic or ſcrophulous diatheſis does not evidently prevail.

Hence white ſwellings of the rheumatic kind are moſt frequent at that period of life, and in thoſe conſtitutions in which rheumatiſm occurs in the moſt obvious form of the diſeaſe: We daily meet with it in the young and plethoric, and not often in patients advanced in years, and of oppoſite temperaments: We alſo find, that it is frequently induced by cold, which may be conſidered as the moſt common cauſe of rheumatiſm, and it attacks chiefly thoſe parts which we know to be the moſt frequent ſeat of rheumatic affections: Rheumatiſm for the moſt part attacks the large joints only, and it fixes chiefly on the ligaments: Now, we meet with ten inſtances of this variety of white ſwelling in the knee for one in any other joint, and we find on diſſection, that in the firſt ſtages of the diſeaſe the ligaments only are affected, as in moſt inſtances is alſo the caſe in rheumatiſm: The effuſion into the cellular ſubſtance of that glairy

matter

matter mentioned in the defcription is probably occafioned by an exfudation from the veffels of thofe ligaments that have been at firft inflamed; for we know that ligamentous parts never furnifh a fluid proper for the formation of pus: In the courfe of the difeafe, indeed, abfceffes containing purulent matter frequently form, but never till the inflammation has fpread to the furrounding parts, which more readily afford a fluid fit for this purpofe.

In like manner, although the other variety of white fwelling commonly begins in the bones, fcarcely a doubt can arife of its being of a fcrophulous nature: It appears indeed to be the real fpina ventofa of authors*, which there is much reafon to think is a difeafe of the fame nature in the bones, that fcrophula, in its ufual form, is in the foft parts: The appearances of the two difeafes are exceedingly fimilar: They both begin with confiderable enlargement or fwelling of the parts which they attack, and this in both generally

*Vide § 16. of this Section.

rally ends in ulceration, and they both often occur in the ſame perſon at the ſame time: This variety of white ſwelling is moſt frequent in early life, a period in which other ſymptoms of ſcrophula are alſo moſt frequent; and if other ſymptoms of ſcrophula do not ſubſiſt at the time, we commonly find that they have prevailed at ſome former period, or that the patient is deſcended from ſcrophulous parents, and therefore that the ſeeds of the diſeaſe are probably lurking in his conſtitution.

In the management of white ſwelling, it is a point of importance, as I have already obſerved, to diſtinguiſh with accuracy between the two varieties of the diſeaſe; for in the one, *viz.* the rheumatic, when not of long duration, we may frequently accompliſh a cure; while, in the other, no material advantage is to be looked for from any remedy with which we are as yet acquainted: By not diſcriminating between the two varieties of white ſwelling, remedies are often employed,

ployed, which, however beneficial they might prove in the one diseafe, in the other can be of no avail, and may even do harm; and the fame want of discrimination is apt to make us despair in every inftance, from finding, that in a great proportion of cafes no advantage is obtained from any meafures we can employ.

In the rheumatic white fwelling, we derive confiderable advantage from due attention to an antiphlogiftic courfe.

The firft remedy which, with this view, fhould be employed, is blood-letting; but inftead of general evacuations from the arm or elfewhere, it proves always more effectual to take blood from the part affected. Cupping and fcarifying proves particularly ufeful. The inftrument fhould be applied to each fide of the difeafed joint; on each fide of the rotula, for inftance, when the knee is the part affected: Eight or ten ounces of blood fhould be difcharged, and this fhould be repeated at proper intervals, once, twice, or oftener, according to the violence of the fymp-

toms,

toms, and ſtrength of the patient at the time.

In the ordinary way of diſcharging only an ounce or two of blood by this operation, it has, in general, little or no influence; but in the quantities which I have mentioned, and which, by thoſe accuſtomed to the practice, are commonly eaſily obtained, it ſeldom fails of giving relief.

It muſt be obſerved, that cupping proves here more beneficial than the application of leeches; which is not only a more tedious method of procuring the ſame quantity of blood, but the ſwelling which they occaſion is frequently troubleſome; and what is often of more importance, it frequently gives an interruption, for a time, to the uſe of other remedies. In ſome inſtances, however, when the ſwelling of the joint is conſiderable, it proves difficult, or even impracticable, to procure a ſufficient quantity of blood by cupping: In ſuch caſes, we are under the neceſſity of applying leeches, which ſeldom

fail

fail of obtaining as much blood as is required.

Upon the anterior part of the joint, where the cupping-glaſſes or leeches have not been placed, a ſmall bliſter ſhould be directly applied; and the part ſhould be kept open with iſſue-ointment, till the wounds from whence the blood was diſcharged are ſo far healed, that a bliſter may likewiſe be laid on one ſide of the joint; and as ſoon as this is nearly healed, the other ſide ſhould be alſo bliſtered.

By thus alternately applying them, firſt to one ſide, and then to the other, almoſt a conſtant ſtimulus is excited on the ſurface; which, in deep-ſeated inflammation, ſeems in many inſtances to have even a more powerful influence than all the diſcharge occaſioned by bliſters.

Gentle laxatives, given at proper intervals, prove alſo ſerviceable; and the patient ſhould, in every reſpect, be kept upon a ſtrict antiphlogiſtic regimen: No animal food ſhould be allowed, nor

ſhould

ſhould he be permitted to take drink ſtronger than gruel or whey.

In the firſt ſtages of the diſeaſe, this mode of treatment ſeldom fails to prove uſeful: Local blood-letting, when carried to a ſufficient length, very commonly relieves the ſymptoms induced by inflammation, and the bliſters often remove them entirely: Theſe remedies, however, are not to be truſted in the more advanced ſtages of white ſwelling, nor ought they ever to be long perſiſted in when they do not ſoon procure relief. In this ſtate of the diſeaſe we depend upon other remedies.

Mercury proves here particularly uſeful, not given ſo as to ſalivate, but merely to affect the mouth gently, and to keep it ſomewhat ſore for a few weeks.

In ſuch circumſtances the beſt form of uſing mercury is by external friction; and the unction ſhould be of ſuch a ſtrength as to admit of being uſed in the quantity of two drams three times a-day; for friction, in order to prove uſeful, muſt be

be frequently repeated and continued for the ſpace of an hour at each application.

Gentle mercurials may alſo be given internally, but, as all the advantages to be derived from them, are obtained from unction, together with any benefit that may enſue from the friction uſed in applying it, the latter ſhould in general be preferred.

By Le Dran, and other French writers, the pouring of warm water on ſwellings in this ſituation is much recommended; and I have found in the courſe of much experience in this branch of buſineſs, that more advantage is derived from it than from any other remedy; particularly from the application of warm ſteam: This remedy, however, in order to prove uſeful requires to be applied to the parts particularly affected, and to be frequently renewed.

When warm water proves uſeful here, it may not only act from the degree of

heat which it contains, but in proportion to the height from which it falls: Hence, in ſome caſes, I have deſired it to be poured from the height of fifteen or ſixteen feet, and in different inſtances with advantage. It is eaſily done by pouring the water through a leather or tin tube.

The application of ſteam and the fall of warm water, proves particularly uſeful in the removal of that contracted ſtate of the flexor muſcles, which very univerſally takes place in white ſwellings of the joints. The ſtiffneſs of joints affected in this manner, is often in ſuch a degree as to give cauſe to think that it can only be produced by the ends of the bones forming the joint having run into one another, or by the ſynovial fluid of the joint becoming thick, and totally unfit for lubricating the parts to which it is applied: I believe, however, that theſe occurrences are both exceedingly rare: Of all the diſeaſed joints I have diſſected, and the number

is confiderable, I have only met with two inftances of the different bones of a joint adhering to each other, and not one inftance of the fynovia being infpiffated: Neither have I met with any anatomift who ever obferved it: I therefore conclude, that the ftiffnefs of joints which fucceeds to white fwelling proceeds in almoft every inftance from the caufe I have mentioned, a morbid contraction of the flexor mufcles of the difeafed limb.

I have already obferved, that in the removal of this contracted ftate of the mufcles, the application of warm fteam, and the fall of warm water from a height, proves particularly ufeful: We alfo derive much advantage from the ufe of emollients: By long perfeverance in rubbing contractions of this kind with greafy emollients, I have in many inftances proved fuccefsful where the patient, after being lame for years, had defpaired of ever getting better. Emollients, however, in order to prove ufeful, muft be applied for a great length of time. They muft be rubbed

for the ſpace of an hour three times a-day over all the diſeaſed parts. The friction ſhould not be confined, as is commonly done, to the rigid tendons, but ſhould be extended over the whole correſponding muſcles from one extremity to the other, and more eſpecially over the fleſhy parts of the muſcles, where the principal cauſe of ſuch complaints is probably ſeated; theſe parts being chiefly, if not altogether, poſſeſſed of the contractile, and conſequently of the reſiſting, powers.

The affection we are now conſidering, is ſo obviouſly one of thoſe requiring the uſe of emollients, that almoſt every old woman has ſome particular form or other of recommending them; one of which I cannot avoid mentioning, as I have frequently known it uſed, and, in ſome inſtances, with very evident advantages, *viz.* the web or omentum of a new-killed ſheep, or of any other animal, applied over all the diſeaſed parts directly on being cut out of the animal.

In

In two of the cafes to which I allude, one was in the knee, and the other in the hand; and the motion of the joints, after having been totally loft, was almoft perfectly reftored. The application fhould be frequently renewed, once a-day at leaft, or oftener when it can be done: for on being more than four or five hours applied, it becomes difagreeable; after this indeed it commonly turns ftiff, and cannot therefore be of much utility. The fame kind of remedy, ufed in fomewhat a different manner, I find recommended by Lieutaud, a celebrated French practitioner *.

I have entered more particularly into the confideration of this fubject, from having often found, that, with due attention, the ufe of many joints might be re-

 covered,

* Mr Lieutaud fays, when fpeaking of fuch affections, "Obvolvitur etiam pars affecta pelle calida vervecis, vituli, alteriufve pecudis, recens mactati, vel immittitur in imum ventrem bovis, vitali calore haud defraudatæ." Synopfis Univerfæ Praxeos Medicæ, vol. I. p. 400.

covered, which, from a miſtaken opinion of their cauſes, have generally from the firſt been conſidered as incurable: And I muſt here alſo refer to ſome farther obſervations which I ſhall find neceſſary to make upon the ſame ſubject, in Chapter XLIII. when ſpeaking of diſtorted limbs.

Hitherto I have ſuppoſed the diſeaſe not to be ſo far advanced as to have occaſioned the formation of matter; for, when come this length, no material advantages can be expected from any of the remedies we have recommended: but, even in this ſtate of white ſwelling, if the patient's health is not greatly impaired, amputation of the member ſhould by no means be adviſed, as is uſually done. For, by opening the different abſceſſes ſoon after their formation, the matter may be prevented from affecting, or eſſentially injuring, the capſular ligaments of the joints; the deſtruction of which would no doubt render it neceſſary immediately to remove the limb.

All

All collections of this kind ſhould be diſcharged by paſſing a ſeton through them. This never proves hurtful, and by preventing the acceſs of air, as I have elſewhere endeavoured to ſhow, abſceſſes opened in this manner heal more readily, than they uſually do when laid open with large inciſions.

By opening the different abſceſſes as quickly as matter is found to be formed in them, and ſupporting the patient with a light nouriſhing diet, while all the other circumſtances of his ſituation meet with due attention, we often ſucceed in ſaving limbs which otherwiſe it would be neceſſary to remove. At the ſame time, it muſt be acknowledged, that inſtances often occur, in which none of our remedies proved ſucceſsful, and in which we have no other method of ſaving life. In ſuch circumſtances, we have no room to deliberate, and amputation of the diſeaſed limb ought no doubt to take place.

In Chapter XLV. I ſhall find it neceſſary to conſider this ſubject more particu-

 larly,

larly, but at preſent I may obſerve, with reſpect to the moſt proper period of amputating limbs in white ſwelling, that, even in point of ſucceſs from the operation, it ought never to be adviſed till the diſeaſe is far advanced. For though it might, *a priori*, be imagined, that the more early in the diſeaſe, amputation of the member is performed, the more ſucceſsful it ſhould prove; and although this, indeed, has been made uſe of as a common argument for amputating early in every caſe of white ſwelling; yet, however plauſible the obſervation may appear, it will not, from experience, be found to hold good. For, in this, as well as in other diſeaſes, I have conſtantly found, that amputation has more frequently ſucceeded, that is, a greater proportion of patients have recovered who have previouſly been conſiderably reduced, than of ſuch as have ſtill remained in a full habit of body.

In the former, when the conſtitution has not been too much broken, and we have it

always in our power to guard againſt its being ſo, the ſeveral ſymptoms of hectic fever, which previouſly took place, are commonly removed in a few days after the limb is taken off: No high degree of inflammation is ever produced; the patient daily improves in health; and a complete cure, if he has not been too much reduced, is generally ſoon obtained. In the latter again, the very reverſe of this takes place: The patient, from being in high health at the time of the operation, is generally thrown into a ſmart inflammatory fever; which is, no doubt, often removed, but which frequently either carries him off immediately, or produces ſuch effects as he never thoroughly recovers from.

So that in no caſe whatever is it proper to adviſe amputation till every probable means for ſaving the limb has been tried in vain.

All the means we have hitherto recommended, relate particularly to the rheumatic ſpecies of white ſwelling; and when employed

employed in time, and duly perſiſted in, they frequently prove uſeful: But when the diſeaſe is ſo far advanced as to have deſtroyed the capſular ligaments of the joint, and perhaps even the cartilages and bones themſelves, amputation of the member is then no doubt our only reſource.

In the more fatal ſpecies of white ſwelling, namely, the ſcrophulous, as I know no certain remedy for ſcrophula, even in its milder form in the ſoft parts of the body, I cannot here pretend to offer any thing ſatisfactory upon the ſubject.

In the ſmall joints, when the diſeaſed parts of the bone begin to caſt off, a cure may be ſometimes promoted by aſſiſting the efforts of nature; but in all the large joints, particularly in the knee and ancle, it is not probable that any other reſource than amputation will ever afford relief. In this variety of the diſeaſe, indeed, many are of opinion, that amputation ſhould never be adviſed; for the ſwelling being connected with ſcrophula in the conſtitution, the diſeaſe they conclude will ap-

pear

pear in ſome other part: This in ſome inſtances will no doubt happen, but I know from experience, that in a great proportion of caſes it will not; and, were the riſk of this even much greater than it is, ſtill I would adviſe it, in preference to the conſtant torment with which patients in this ſituation are univerſally diſtreſſed.

When, however, amputation of the member is not to take place, we endeavour by other means to alleviate as much as poſſible the painful feelings of the patient: With this view, cicuta and hyocyamus are ſometimes given, both ſeparately and combined; but in great degrees of pain we depend upon opiates alone.

§ 11. *Of Bronchocele.*

EVERY tumor of an indolent nature occupying the fore-part of the neck, is in common practice termed a Bronchocele. In the Engliſh language we have no preciſe

cise denomination for it. In French this disease is termed Goitre.

Swellings in this situation would with more propriety be termed Tracheacele: But with a view to prevent confusion, we think it better to retain that appellation under which they have commonly been described.

Authors mention different diseases under this denomination: Some contend, that the term Bronchocele should be confined to one variety of tumor; and others, that it may be applied to swellings of very different kinds: Disputes of this nature, however, answer no good purpose; and as practical observations are the chief objects of this work, I think it better to mention the varieties of the disease, which I have either seen, or which have been accurately described by authors, with the treatment suited to each, than to enter the lists of controversy upon this part of the subject.

1. The fore-part of the neck, like every part of the body ſupplied with large arteries, is liable to ſwellings of the aneuriſmal kind. Aneuriſms do not frequently occur in this ſituation, but in ſome inſtances they are met with.

This variety of the diſeaſe may be diſtinguiſhed by all the ordinary ſymptoms of aneuriſm: By appearing ſuddenly after ſome violent exertion; particularly in coughing or laughing; being ſoft and compreſſible from the firſt; by the tumor being at firſt ſeated directly on the courſe of one of the carotid arteries; by the pulſe in the advanced ſtages of the diſeaſe being affected, and remarkably unequal, and a ſtrong pulſation being diſcovered through the whole extent of the tumor.

2. Encyſted tumors, particularly thoſe of the melicerous kind, are frequently met with on the courſe of the trachea.—They are characteriſed by the ſame ſymptoms in this ſituation by which they are marked in other parts of the body: They are ſoft and compreſſible; the fluctuation of

a fluid is evident upon preſſure; although always ſmall at firſt, they frequently become ſo extenſive, as to reach from one ear to another; and the ſkin uſually retains its natural appearance to the laſt. The ſeat of this variety of the diſeaſe is evidently in the cellular membrane.

3. Inſtances have occurred of tumors forming in this ſituation, by the lining membrane of the trachea being forced out between two of the cartilages in violent fits of ſneezing, coughing, and laughing. In this caſe the ſwelling is at firſt ſmall; and although ſoft and compreſſible, no fluctuation is perceived in it.

4. The lymphatic glands of the neck have in ſome caſes of ſcrophula become ſo ſwelled, as to produce tumors of conſiderable magnitude over the whole courſe of the trachea. They are diſtinguiſhed by the ſymptoms which uſually accompany ſcrophulous ſwellings.

5. The thyroid gland has in ſome inſtances been known to ſwell to a great bulk, ſo as to induce tumors of an enormous

mous ſize, extending from each ſide of the trachea to the angle of the correſponding jaw. In this variety of the diſeaſe, the ſwelling is at firſt ſoft; but no fluctuation is perceived in it; the ſkin retains its natural appearance; and no pain takes place in it: But as the tumor advances in ſize, it becomes unequally hard; being firm or elaſtic in ſome parts, and perfectly ſoft in others: The ſkin acquires a copper colour, and the veins of the neck become varicoſe; and in this ſtate of the diſeaſe the face becomes fluſhed, and the patient complains of frequent head-ach, as well as of ſtinging pains through the body of the tumor.

This is mentioned by authors as that variety of the diſeaſe which occurs ſo frequently among the inhabitants of the Alps and other mountainous countries, and which in general is ſuppoſed to originate from the uſe of ſnow-water.

6. Whatever may be the nature of thoſe varieties of bronchocele which occur in other kingdoms, I cannot pretend to ſay, but

but I have reaſon to think, that in this country the thyroid gland is not ſo frequently the ſeat of the diſeaſe as is commonly imagined. At leaſt in all the inſtances I have met with of diſcovering the ſeat of the diſeaſe by diſſection after death, the thyroid gland was not affected. In ſome this gland, inſtead of being increaſed, ſeemed evidently diminiſhed by the compreſſion produced by the tumor; and the ſwelling itſelf was chiefly formed of a condenſed cellular ſubſtance, with effuſions in different parts of it of a viſcid brown matter. In one caſe the tumor was chiefly fixed on one ſide of the neck; but in others it occupied both ſides, and reached from one ear to the other, and from the ſternum to the chin. In ſome, the ſwelling had ſubſiſted for a great number of years; and in one inſtance the patient died at laſt of another diſeaſe. At firſt they had no other appearance than might be expected from a natural increaſe in the parts lying contiguous to the trachea; they were ſoft and compreſſible;

 but

but no fluctuation was perceived in them, and the ſkin retained its natural colour: But as they increaſed in ſize, they likewiſe became firmer; for although at laſt a ſoftneſs, and even a fluctuation, was diſcovered in ſome parts of them, yet the principal part of the tumor continued hard, while others had a peculiar ſpringineſs or elaſticity, ſimilar to that of a tin caniſter: The veins on the ſurface of the tumors became turgid; and the face of a livid colour, evidently from the blood being impeded in its courſe from the head. All of theſe patients complained of much giddineſs: The breathing in all of them was much obſtructed; and the patient, who died of the diſeaſe, ſeemed to ſuffer chiefly from this circumſtance.

With ſuch varieties of bronchocele, no one mode of treatment it is obvious can be applicable. Hence the abſurdity of ſpecifics for this diſeaſe, ſuch as calcined ſponge and egg-ſhells, propoſed and ſtrongly recommended by many: For although this and other remedies might prove uſeful in

one variety of tumor, it would be abſurd to ſuppoſe that they can be ſo as by many has been aſſerted in all.

1. In the aneuriſmal bronchocele, the treatment ſuited to aneuriſm in general muſt be obſerved. To ſecure either of the carotid arteries with a ligature, muſt in all circumſtances be a hazardous operation: But here there is no alternative; of whatever kind the aneuriſm may be, death will certainly enſue, if not prevented by this operation. This chance, therefore, ought always to be given; as in other caſes of aneuriſm the artery ſhould be tied both above and below the affected part.

I know from experiment, that one of the carotids may be tied in other animals, and that death will not enſue: This gives cauſe to ſuppoſe that it may likewiſe be done in the human body.

2. Where the diſeaſe is found to be formed by encyſted tumors upon the trachea, what we have ſaid upon the treatment of theſe tumors in general will prove applicable.

applicable *. While ſmall, the cyſts with their contents may be removed in the manner we have mentioned: And even in the moſt enlarged ſtate of them, we need not deſpair of being able to afford effectual relief. In thoſe of the ſteatomatous kind, conſiſting entirely of fat, however large they may be, we may with ſafety attempt to remove them: For in almoſt every inſtance, the connection of tumors of this deſcription with the contiguous parts is ſo ſlight, that they are removed with eaſe. The veſſels on the ſurface of the tumor may be enlarged; but theſe are chiefly veins, and may be eaſily avoided. In tumors formed altogether of fat, I have never ſeen any of the arteries of ſuch a ſize as when cut to give any diſturbance; they are always ſmall, and eaſily ſecured by preſſure when they lie beyond the reach of ligatures.

3. When, again, the contents of a bronchocele are fluid, they may be diſcharged either by an inciſion with a ſcalpel, or by

* *Vide* § 2. of this ſection.

paſſing a ſeton or cord through the cyſt; and when the contained matter is of a pultaceous conſiſtence, forming what is termed an Atheroma, it ſhould be diſcharged by a large opening in the moſt depending part of the tumor.

4. Where the tumor is formed by a hernia or protruſion of the lining membrane of the trachea, gentle preſſure with a roller is the only remedy to be depended on; and all ſuch exertions ſhould be avoided as might have any influence in producing it; particularly violent laughter, ſneezing, coughing, and crying. Where the diſeaſe is ſcrophulous, we muſt depend chiefly on thoſe remedies which prove moſt uſeful in other ſcrophulous affections: And with a view to remove the compreſſion produced upon the trachea, as well as upon the veins returning from the head, the contents of the tumors ſhould be diſcharged as ſoon as they appear to be ſufficiently fluid.

5. Where the diſeaſe originates from tumefaction of the thyroid gland, frequent

frictions

frictions prove useful, particularly when employed early, before the swelling has become large; and saponaceous and mercurial plasters have in some cases appeared to prove serviceable. Practitioners, however, are seldom consulted in that stage of the disease in which remedies of this kind may be usefully applied: For as the swelling does not give uneasiness at first, it is seldom mentioned by the patient till it has subsisted for some time. In an enlarged state of this gland, I do not suppose that any remedy will ever be found sufficiently powerful to discuss it; so that the only points to be determined, are, whether or not we should attempt to remove these tumors by an operation? and whether it should be done with caustic or the scalpel?

We know that the thyroid gland is very plentifully supplied with blood, and that the arteries which belong to it are usually much enlarged in this disease. This, together with the contiguity of the thyroid gland to the carotid arteries, which in

this enlarged ſtate of that gland are even apt to be compreſſed by it, renders the extirpation of it in an advanced period of the diſeaſe extremely hazardous. The arteries here are of ſuch magnitude as to pour out a great deal of blood in a ſhort ſpace of time; while they lie at ſuch a depth in this enlarged ſtate of the parts, that they cannot be eaſily laid hold of with ligatures, nor can much compreſſion be applied to them from their ſituation with reſpect to the trachea. I therefore conclude, when tumors of this deſcription have acquired any conſiderable bulk, that it would be improper to run the hazard of removing them with the knife, and that the patient ſhould rather truſt to the treatment uſually employed in ſuch caſes for palliating the ſymptoms as they occur*. And although we are informed, that

* Mr Gooch relates a caſe, where in an attempt to remove a bronchocele by exciſion, ſuch profuſe hemorrhagy took place, that the operator, although very intrepid, was obliged to deſiſt before the operation was half finiſhed.

that in this ſituation the potential, and even the actual cauteries have been employed with advantage, yet the practice has not become ſo general as to make it probable that it has ever been ſucceſsful; nor do I think that it ſhould ever be adviſed in any ſtage of this diſeaſe.

But although the reaſons I have mentioned may be ſufficient for preventing the removal of theſe tumors in any way when much enlarged; yet while the tumor continues ſmall; when frictions and other remedies fail; and when the diſeaſe is continuing to advance; I think any practitioner would be warranted in adviſing

finiſhed. No means that were employed could put a total ſtop to the blood; and the patient died in leſs than a week.

Another caſe had very nearly terminated fatally; and the patient's life was only preſerved by having a ſucceſſion of perſons to keep a conſtant preſſure upon the bleeding veſſels, day and night for near a week, with their fingers on proper compreſſes, after the operator had been repeatedly diſappointed in the uſe of the needle and ligature.—*Vide* Gooch's Medical and Chirurgical Obſervations, p. 136.

ſing it to be removed by exciſion: For in this early period of the diſeaſe, the difficulty of ſecuring the arteries with ligatures is much leſs than it afterwards becomes; at leaſt the riſk occurring from this muſt be inconſiderable, when compared with that which muſt probably enſue from the tumor being allowed to remain.

In the ſixth and laſt variety of the diſeaſe which I have mentioned, frictions with mercurial ointment have in its early ſtages appeared to prove ſerviceable. And in one caſe the progreſs of the tumor was evidently retarded by repeated bliſters; but the patient going to a diſtance, they were neglected, and at laſt it arrived at a very enormous ſize. In this ſtate I ſaw him at the diſtauce of ſeveral years, but I did not learn in what manner the caſe terminated. I have reaſon to think, however, from the appearance of the ſwelling, both at its commencement and in its more advanced ſtages, that it proceeded from an effuſion into

into the cellular fubftance of the neck, attended with that condenfed ftate of this fubftance which was difcovered by diffection in fome of the cafes mentioned above.

But however ferviceable blifters, as well as other remedies, might prove in the early ftages of the difeafe, no advantage can be expected from them when the tumor has acquired any great bulk. In this fituation palliatives only fhould be employed; for the bafis of the fwelling ufually runs fo deep, that it could not be removed but with the utmoft hazard; and it is not probable that any advantage would be derived from laying it open; for, a confiderable part of it being firm and folid, the fize of the tumor would not be much diminifhed by the difcharge which might be procured, while the fore that would enfue might degenerate into cancer.

§ 12.

§ 12. *Of Nævi Materni.*

By Nævi Materni, are meant thoſe marks which we frequently find in different parts of the body at birth; and which are ſuppoſed to originate from impreſſions made on the mind of the mother during pregnancy. They are of various forms, being frequently found to reſemble ſtrawberries and cherries, and in other inſtances grapes, figs, pears, &c. Their colour is various; but for the moſt part they are of a deep red, reſembling the colour of claret or red port.

Many of theſe marks are perfectly flat, and never riſe above the level of the ſkin; and not being painful, they never in this ſtate become the objects of ſurgery. But occaſionally we meet with them from the firſt in the form of ſmall protuberances, which in ſome increaſe ſo quickly as to arrive at a conſiderable ſize in the courſe of a few months. I once ſaw a tumor of this kind in a child, of a year old, of the ſize

ſize of a gooſe's egg, which at birth was not larger than a pea.

No fluctuation is diſcovered in theſe tumors; on the contrary, they feel to be firm and fleſhy. In ſome caſes they are pendulous, and hang by ſlender attachments to the contiguous parts; but for the moſt part they are fixed by broad extenſive baſes.

Various remedies have been recommended for the removal of theſe excreſcences; and in ancient times different charms were propoſed for them. The myſtery proceeding from this is perhaps one reaſon of the general averſion which ſtill prevails againſt any attempt being made to remove them by chirurgical operations: But it has not appeared in the courſe of my obſervation, that more danger attends the removal of this kind of ſwelling than the extirpation of any other tumor of the ſarcomatous kind. They are ſupplied indeed more plentifully than other tumors with blood; for in many inſtances they appear to be entirely formed by

by a congeries of ſmall blood-veſſels; but the arteries which go to them are in general eaſily ſecured with ligatures. It is proper, however, to remark, that the operation ſhould never be long delayed; for as the ſize of the veſſels depends upon that of the tumor, they ſometimes become ſo large as to throw out a good deal of blood before they can be ſecured; ſo that the operation ſhould always be propoſed as ſoon as it is obſerved that the tumor, inſtead of remaining ſtationary, proceeds to increaſe.

The operation is of a very ſimple nature. The tumor, with all the diſcoloured ſkin, is to be diſſected off with a ſcalpel; and the arteries being ſecured, the edges of the remaining ſkin ſhould be drawn together, and kept in this ſituation either with adheſive plaſters or ſutures: Or, when they cannot be drawn completely together, they may at leaſt be made to cover a conſiderable part of the ſore; by which the cure will be much ſhortened, and the cicatrix leſſened. In

this case, that part of the sore which is left uncovered must be treated like a wound from any other cause.

It is scarcely necessary to mention, that where the tumor is pendulous, and connected to the parts beneath by a narrow neck only, it may be removed by tying a ligature round it of a degree of tightness sufficient for putting a stop to the circulation through the whole of it.

§ 13. *Of Warts.*

Warts are indolent, small, hard, colourless excrescences, which appear on different parts of the body, but chiefly on the fingers and hands. They take their rise from the cutis and cuticle. They occur at every period of life, but more frequently in infancy than in old age.

When from their size or situation warts do not prove troublesome, they should not be touched; for generally in course of time they either fall off or waste gradually

dually away. But ſometimes they are ſo large and ſo ſituated that we are under the neceſſity of employing means for removing them.

When warts are pendulous, and have narrow necks, the eaſieſt method of taking them away is with ligatures: For this purpoſe a hair is ſometimes uſed, but a fine thread is preferable. But when their baſes are broad, we remove them either with the ſcalpel or eſcharotic applications. Few patients, however, will ſubmit to the ſcalpel; and as we ſeldom fail with eſcharotics, they are generally employed.

The lunar cauſtic, or lapis infernalis, are the ſtrongeſt applications of this kind; but warts commonly become very painful after being two or three times rubbed with them. The ſame objection occurs to a ſolution of quickſilver in aquafortis, otherwiſe it proves a very powerful eſcharotic. Mercury diſſolved in an equal quantity, or even in double its weight, of ſtrong ſpirit of nitre, would remove warts

of

of every kind; but as the ſolution is apt to ſpread, it ſhould be uſed with caution. Pulvis ſabinæ being daily applied to warts, will for the moſt part remove them in the courſe of two or three weeks; but the beſt application I have tried is crude ſal ammoniac: It acts ſlowly, but the pain which it excites is inconſiderable, and excepting in the very hardeſt kind of wart, it ſeldom fails in removing them. They ſhould be well rubbed two or three times daily with a piece of the ſalt previouſly moiſtened in water. Liquified ſalt of tartar ſometimes anſwers the purpoſe; and I have known ſpirit of hartſhorn prove ſucceſsful.

Warts frequently appear upon the penis as a ſymptom in venereal affections, and as they are nearly of the ſame nature with thoſe we have been conſidering, the ſame method of treatment will apply to them. In general, the tendency in the ſyſtem to produce them does not continue long; and if the parts are kept clean, they at laſt often begin to decay, and go

entirely

entirely off whether any application is made to them or not. But as patients are always anxious to get free of them, practitioners are ſometimes induced to make trial of remedies too early, for till this tendency to their formation is removed, warts riſe almoſt as quickly as they are rubbed off. Nor has mercury any influence in preventing this: I have known mercury adviſed for the removal of warts; but never with any advantage. When we have reaſon to ſuppoſe, therefore, that every other ſymptom of the diſeaſe is eradicated, the continuance of warts ſhould be no inducement to the exhibition of more mercury,

When venereal warts are tender on the ſurface, and produce matter, as is ſometimes the caſe, waſhing them morning and evening in lime-water, or in a weak ſolution of ſaccharum ſaturni, will commonly remove this; and at laſt they will diſappear in the manner I have mentioned. Bnt when this delay will not be agreed to, one or other of the eſcharotics mentioned

tioned above muſt be employed; or if the patient conſents to their being removed with the ſcalpel, the parts from whence they are cut may be touched with lunar cauſtic, in order to prevent them, with as much certainty as poſſible, from returning.

It is proper to remark, that in the treatment of warts of every kind, we ſhould be cautious in avoiding every application which we have once obſerved to excite much inflammation; for although under a ſlight degree of inflammation, warts very commonly decay and drop off, they are apt to ſpread and excite troubleſome ſores when much inflamed by the uſe of irritating applications. For the ſame reaſon, when a wart is to be removed with the ſcalpel, we ſhould rather encroach a little upon the ſound ſkin, than run any riſk of injuring the wart itſelf, or of leaving any part of it. By want of attention to this, I have known the moſt formidable ſymptoms induced by what at firſt appeared to be ſuch a trifling excreſ-

cence, as not to deſerve notice. In one caſe, indeed, ſuch a painful obſtinate ſore enſued on the leg, from the removal of a ſmall wart, that amputation of the limb became neceſſary, in order to ſave the life of the patient.

§ 14. *Of Fleſhy Excreſcences.*

ALMOST every part of the body is occaſionally liable to the formation of fleſhy excreſcences. They differ from warts in being ſofter, and in being apt to acquire a conſiderable bulk. They are ſeldom painful. They are of a more deep red colour than the ſkin in health, and for the moſt part they have a firmneſs of conſiſtence reſembling that of the lips. When firſt laid open, they exhibit nearly the ſame appearances with a piece of muſcular ſubſtance newly divided; but on farther examination, no fibres can be diſcovered in them. They ſeem to conſiſt chiefly of cellular ſubſtance, very plentifully

tifully ſuplied with blood-veſſels infinitely ramified.

In the treatment of theſe tumors, no external application is found to anſwer any good purpoſe. Eſcharotics have ſometimes been employed for removing them; but they ſeldom prove effectual, and they are apt to irritate and excite inflammation. Whenever it is determined, therefore, to remove a tumor of this kind, it ſhould either be done with a ligature, or with the ſcalpel. When the neck is narrow, the method by ligature ſhould be preferred; but when the baſe is broad, this is inadmiſſible. When the ſcalpel is employed, care ſhould be taken that no part of the tumor is left; and the edges of the divided ſkin ſhould be drawn ſo together, as to cover as much of the remaining ſore as can with propriety be done. When any part of it does not heal by the firſt intention, it muſt be treated like wounds produced in any other manner.

§ 15. *Of Corns.*

Corns are ſmall hard tubercles, which form on different parts of the body, particlarly on the toes and ſoles of the feet. In ſome caſes they appear to be of a horny inorganic nature; but in others, it is evident that they are ſupplied both with blood-veſſels and nerves, from their being painful, and diſcharging blood on being cut. For the moſt part they are ſeated in the ſkin; but in ſome inſtances they paſs to ſuch a depth as to reach the periosteum; and in this caſe they prove always very diſtreſsful, particularly when ſeated on any of the joints, or on parts thinly covered with fleſh.

The beſt preventative of corns, is the wearing of wide ſhoes, ſo as to obviate preſſure on the joints of the toes and other parts of the feet where they are moſt apt to occur; and unleſs this meets with attention, it is impoſſible in any caſe to remove them. Various remedies are recommended

mended for the cure or removal of corns. One of the most simple and inoffensive of these is to pare off all the inorganic part of them, after bathing in warm water, and immediately thereafter applying over them slips of soft leather spread with gum plaster. If the soaking in water and paring the corns is repeated from time to time, and the application of this plaster continued, the corns will be kept easy, and the hard knots will often separate and fall out; when, if pressure is avoided, the vacancy produced by their removal will fill up with cellular substance, and no return of the disease will be experienced.

Corns may also be removed by dividing the cuticle which connects them to the surrounding parts with a small sharp-pointed scalpel, and then dissecting them from the parts beneath with the same instrument and the assistance of small forceps. When done with caution, this operation gives no pain, no harm ever arises from it, and it removes the disease in the speediest

manner: Much care, however, is neceſſary in order to avoid the cutis vera, for in wounding the ſkin, we not only excite a good deal of pain, but are apt to lay the foundation of tedious and diſtreſsful ulcers: Neither is it neceſſary to go to ſuch a depth, as corns are always produced from the cuticle, and do not penetrate deeper than the ſurface of the ſkin.

§ 16. *Of a Simple Exoſtoſis, Venereal Nodes, and Spina Ventoſa.*

An Exoſtoſis is an indolent hard tumor originating from a bone. In ſome caſes it is altogether a local affection; being produced by a ſuperabundancy of callus in caſes of fractured bones; or by bones being deeply wounded, or their ſubſtance eroded by ulcers. In others, it appears as the ſymptom of ſome general affection of the ſyſtem, particularly of the lues venerea and ſcrophula. In the firſt of

of these diseases, the tumor is termed a Venereal Node. When it appears as a symptom of scrophula, we usually term it Spina Ventosa.

Exostosis, when local, and proceeding from effusion of osseous matter in fractured or wounded bones, is seldom attended with pain; and after arriving at a certain size, the tumor commonly remains stationary. But when it originates from an internal cause, it is commonly painful from the first; probably from the distention of the periosteum, which being a firm membrane, and closely attached to the bone beneath, does not readily yield to the increase of the tumor. And in this case the swelling continues to advance, either till it bursts into a sore, or till the disease in the constitution by which it was produced is eradicated.

In venereal nodes, the periosteum is often found inflamed and thickened; and in some cases a small quantity of thin acrid serum is effused between this membrane and the bones. Hence, in these, the swel-

ling in the bone appears to be larger than it really is; for on being laid open, it is often found to be inconſiderable when compared with the previous ſize of the tumor. This has made ſome ſuſpect that the ſwelling which we term a Node in lues venerea, is not originally an affection of the bone, but a thickening of the perioſteum, and that the bone only ſuffers from its connection with this membrane. There is much reaſon, however, to imagine, that the reverſe of this is the caſe, and that the bone is the part primarily affected. For it is worthy of remark, that it is in the advanced ſtages of ſyphilis only, that the bones are apt to be affected; and even then, that it is the hardeſt parts of them, ſuch as the fore-part of the tibia and bones of the cranium, which are moſt apt to ſuffer.

In ſcrophula, we frequently find the whole ſubſtance of a bone become ſwelled, particularly the extremities of the large bones forming the joints of the knee, ankle, elbow, and wriſt. Various conjectures

tures are met with in authors of the origin of the term Spina Ventoſa given to this ſwelling; but whatever may have been the firſt cauſe of it, or whether properly applied or not, we think it right to retain it, in order to prevent that confuſion which enſues from different names being given to the ſame diſeaſe.

In ſpina ventoſa, a pain is firſt diſcovered in the affected bone, and it is uſually ſo deeply ſeated, that the patient is led to think from his feelings, that it proceeds from the very centre of the bone. This ſometimes takes place for ſeveral days before any ſwelling is perceived: but for the moſt part a ſlight degree of fulneſs is obſerved from the firſt. When this takes place along with other ſymptoms of ſcrophula, and eſpecially when it fixes on any of the large joints, there will be cauſe to conſider it as a ſymptom of that diſeaſe: But it often proves to be the firſt ſymptom of ſcrophula, eſpecially in childhood: In which caſe both the parents and ſurgeon are apt to

ſuſpect

ſuſpect that it proceeds from a contuſion or ſprain ; nor does the deluſion ceaſe with the former, till the diſeaſe becomes evident by fixing on other parts of the body.

When ſpina ventoſa occurs in the middle of bones, as ſometimes happens in the bones of the hands and feet, the diſeaſe advances quickly ; and on the ſoft parts burſting above them, a thin, ill-conditioned matter is diſcharged, and the bones are diſcovered to be carious on the introduction of a probe. But when the diſeaſe fixes on any of the large joints, although it ſeldom fails to terminate in ſores at laſt, yet it commonly proceeds to an ulcerated ſtate in a more gradual manner; nor does any remedy with which we are acquainted prevent its progreſs. In this ſituation it lays the foundation of what is uſually termed a White Swelling ; a diſeaſe we have already conſidered at full length *.

When theſe ſwellings burſt and terminate in ſores, the ſoft ſpongy parts of the bones

* *Vide* § 9. of this Section.

bones are found to be diſſolved; and on the matter which they produce being diſcharged, the remaining cavities have the appearance of being formed by the interior part of the bones having been ſcooped out, there being nothing left but a thin oſſeous covering, formed of the hard external lamella of the bone. In this ſtate of the diſeaſe, the appearances which the bone exhibits bear much reſemblance to ſcrophulous ſores in the ſofter parts of the body: And as the ſpina ventoſa is almoſt always in ſome of its ſtages accompanied with other ſymptoms of ſcrophula, I am clearly of opinion, that we ſhould conſider it entirely as a ſcrophulous affection, this being the ſame in the bones what ſcrophula in its more uſual form is in the lymphatic glands.

In the treatment of an exoſtoſis, the cauſe by which the tumor has been induced requires particular attention. Where perfectly local, and formed merely by an exuberance of callus, although ſome deformity may enſue from it, it is ſeldom productive

productive of ſo much pain or inconvenience as to induce the patient to ſpeak of it. But when tumors, even of this local kind, become ſo large as to prove painful, they neceſſarily excite the attention both of the patient and practitioner. Being of a nature that will not yield to medicines, we truſt entirely, in thoſe caſes where it is neceſſary to remove them, to a chirurgical operation.

The patient being placed upon a table, and properly ſecured by aſſiſtants, if there is any riſk of contiguous large arteries being cut, they ought in the firſt place to be ſecured with a tourniquet: An inciſion ſhould now be made through the teguments covering the tumor; and in order to obtain freedom for the remaining ſteps of the operation, it ſhould not only be carried along the whole courſe of the ſwelling, but an inch or even more paſt each end of it. The cut ſhould now be continued down to the bone, at the ſame time that the operator ſhould avoid as much as poſſible doing any injury to the

contiguous

contiguous muſcles, tendons, veins, arteries, and nerves. With due attention to this part of the operation, much diſtreſs may be prevented, which might probably occur were it to be done in a more hurried manner.

On the bone being laid bare, we are next to determine on the beſt method of removing that part of it which forms the tumor: And this will depend upon the ſize of it. When only a ſmall knob, it may be taken off with the head of a trepan: or when too large for this, it may be removed with a common ſaw; and after taking away any ſpiculæ which might create irritation, the ſore may be treated like wounds produced in any other manner. The ſoft parts ſhould be drawn over the bone, and the edges of the ſkin being laid together and ſecured with adheſive plaſters, a cure may poſſibly be obtained by the firſt intention. In ſome caſes, indeed, this may be prevented by ſmall exfoliations taking place from the ſite of the tumor. I know, however, from experience,

rience, that it will ſometimes ſucceed, and therefore I would always adviſe it to be attempted; for even where ſmall exfoliations take place, the pieces of bone will be forced to the ſurface, and may be afterwards taken out long after the cure of the ſoft parts is completed.

An exoſtoſis, however, is ſometimes found to ſurround a bone entirely. In this caſe the treatment now adviſed will not apply. In this ſituation, that portion of the bone muſt be taken out on which the exoſtoſis is fixed, when the bone is of ſuch a length and ſo ſituated as to admit of it: But as this can ſcarcely be done in the ſmall bones of the hands and feet, when any of theſe are affected, it becomes neceſſary to remove the diſeaſed bone entirely. In a caſe of this kind which occurred in one of the metatarſal bones, and where the exoſtoſis ſurrounded the whole circumference of the bone, I thought it better to take out the bone altogether, than to leave the two ends of it only. The one operation was performed with

no

no great difficulty: the other would have been more painful as well as much more tedious, and it would not have proved more fuccefsful. For although the part did not fill up with bone, it became fufficiently firm to enable the patient to walk as well as he did before.

In the long bones, however, of the thighs, legs, or arms, we may fafely venture to remove any portion of them on which an exoftofis is fixed: and where the conftitution is healthy, we need never defpair of nature fupplying the deficiency; for inftances are often met with, even of entire bones being regenerated. When a portion of bone is to be removed, after laying it freely bare by an extenfive incifion, a piece of pafteboard, or thin fheet-lead, fhould be paffed beneath it, in order to protect the contiguous parts from the teeth of the faw. Where a portion of the fibula or tibia is to be removed, the fplint muft be paffed between thefe bones; and when either of the bones of the fore-arm are affected, it muft pafs between the radius

dius and ulna. Different forms of ſaws have been employed for dividing bones affected in this manner; but the common ſaw uſed in amputations anſwers better perhaps than any other.

When the portion of bone is removed, the ſore ſhould be dreſſed with the mildeſt applications; a piece of ſoft lint ſpread with common wax liniment, or merely dipped in oil, ſhould be inſerted between the lips of the wound; and if any thing is employed for retaining them, it ſhould be the many-tailed bandage, which can be undone without moving the limb. It is a point of importance to place the limb in a ſituation the moſt favourable for the diſcharge of matter; and as the operator has it commonly in his power to make the wound more or leſs inclined to any ſide of the limb, this circumſtance ſhould be attended to in the firſt part of the operation.

When the operation has been performed upon either of the bones of the leg or fore-arm, the remaining ſound bone will keep

keep the limb at its full length, ſo that there will be no riſk of its becoming ſhorter. But when a portion of a ſingle bone is taken out, ſome attention is required to prevent the limb from becoming ſhorter during the cure. For this purpoſe different machines have been invented; but I have never found any aſſiſtance of this kind neceſſary: For if the patient is informed of the great importance of keeping the limb in a proper poſture, he will give it all the attention that is requiſite: And beſides, much inconvenience, pain, and inflammation, are apt to enſue from any inſtrument employed for this purpoſe, when applied with a degree of tightneſs neceſſary for keeping the limb in a ſtate of extenſion.

During the cure of the ſore, the chief object is to prevent matter from lodging and paſſing between the contiguous ſound parts. If this is prevented, and the lips of the wound kept open by the eaſy dreſſings I have mentioned, till it fills up with granulations from the bottom, nature will

 accompliſh

accompliſh the reſt. Thoſe ſoft granulations which at firſt occupied all the vacancy between the ends of the divided bones, will ſoon acquire the conſiſtence and ſtrength of bone; and in the courſe of a ſhort time, if the general ſtate of health continues good, the limb will become equally uſeful as it was before.

Hitherto we have ſuppoſed the diſeaſe to be ſeated in the extremities. But tumors of this kind are alſo found in other parts of the body: on different parts of the ſkull; on the under-jaw; on the ribs and clavicles; and I once ſaw a large exoſtoſis on the upper part of the ſcapula. But wherever they are ſituated, the treatment is the ſame. While they give no uneaſineſs, nothing ſhould be done; for they will ſometimes continue ſmall and ſtationary for life: But when they increaſe and prove troubleſome, the ſooner they are removed the better; for the earlier the operation is performed, the more eaſily will it be done.

In that variety of exoſtoſis termed a Node, proceeding from lues venerea, the firſt point to be determined is the ſtate of the ſyſtem. The patient ſhould be immediately put upon ſuch a courſe of mercury as can be depended upon for the removal of any infection he may labour under; and if the tumor in the bone is recent, and not far advanced, any pain which it has induced may be removed by mercury alone. With a view, however, to make the medicine as effectual as poſſible, it ſhould be thrown in as quickly, and in as great quantities, as the patient can bear: for as the ſyſtem is completely infected with the virus before nodes appear, it requires, for the moſt part, a very conſiderable quantity of the medicine to check their progreſs.

At the ſame time that mercury is given inwardly, it is a common practice to rub the part itſelf with mercurial ointment, or to keep it covered with mercurial plaſter. I have not obſerved, however, that any advantage is derived from

this; and I think it is apt to do harm. In tumors of this kind there is reaſon to ſuppoſe that the perioſteum becomes inflamed from the firſt. In different inſtances, the inflammation has appeared to be aggravated both by the application of plaſters, and by the friction uſed with mercurial ointment. Till we know whether the internal exhibition of mercury is to prove effectual or not, ſome mild ſedative application, ſuch as ſaturnine ſolutions, or the unguentum nutritum, which is a preparation of lead, ſhould only be employed. Theſe keep the parts eaſy; and by tending to remove inflammation, they may even have ſome influence in removing the tumor.

But if we find, after there is full evidence of the mercury having entered the ſyſtem, that the local affection of the bone ſtill continues to advance, that the tumor becomes larger and the pain more ſevere, other remedies ſhould be adviſed. In this ſituation, I have ſometimes found the pain relieved immediately by the application

tion of leeches over the tumor; and the pain being moderate, we have it thereby in our power to delay every other remedy till a more complete trial is given to mercury. In ſome caſes, where leeches have failed, bliſters applied directly upon the parts affected have proved ſucceſsful. Neither bliſters, however, nor leeches can have any influence on the original diſeaſe: they will not leſſen the tumor of the bone; but by leſſening the tenſion of the perioſteum, they ſometimes prove more uſeful than perhaps any other remedy we could employ.

When theſe means, however, are too long delayed; when the tumor advances with more rapidity than uſual; or when acrid matter is perhaps confined beneath the perioſteum; neither leeches nor bliſters afford relief. In ſuch caſes, an inciſion made along the courſe of the tumor to the depth of the bone, will often give immediate eaſe. The matter evacuated from theſe tumors is frequently a thin

brown ſanies, at other times, a viſcid tranſparent mucus.

In ſome caſes the inciſion heals kindly by common treatment, even when the tumor of the bone is by no means inconſiderable. Healthy granulations will form, and a cure of the ſore will be accompliſhed, even before the patient has taken as much mercury as may be judged neceſſary for the cure of the diſeaſe. In ſuch caſes, the tumefaction of the bone is not to be regarded: It may probably, indeed, continue during the life of the patient; but no inconveniency will afterwards enſue from it. So that unleſs it is ſo ſituated as to produce much deformity, it ſhould never be touched.

But, in other inſtances, the ſore, inſtead of healing eaſily, remains obſtinate, notwithſtanding all the remedies we can employ. In ſuch circumſtances, this obſtinacy of the ſore is for the moſt part ſuppoſed to ariſe from the venereal virus not being deſtroyed, and a farther continuance of mercury is therefore adviſed. The

mercurial

mercurial courſe ſhould no doubt be carried ſo far as there is any chance of its proving uſeful. But beyond this, it will commonly prove hurtful, and rather tend to protract the cure of the ſore. This, however, is a point upon which no preciſe directions can be given, and muſt be determined by the judgment of the practitioner in attendance.

When the obſtinacy of ſores in this ſituation depends upon other diſeaſes of the ſyſtem, the removal of theſe will forward the cure. But when there is a tendency in the diſeaſed bone to exfoliate, the completion of this proceſs will alone prove effectual. In ſuch circumſtances, the treatment beſt fitted to promote exfoliation ought to be purſued: But as we ſhall elſewhere have occaſion to conſider this ſubject more fully, it is unneceſſary now to enter upon it *.

After all the diſeaſed parts of the bone are removed, the ſore will for the moſt part heal eaſily. But in ſome caſes, ſuch

* *Vide* Chap. IV. Sect. VII.

a thickening of the periofteum and contiguous parts has been produced by the long continuance of the difeafe, that the cure ftill proceeds flowly. In fuch circumftances, mild emollient applications do harm, and nothing in general proves fo ufeful as ointments ftrongly inpregnated with red precipitate or verdigris. In fome cafes, even thefe do not act fpeedily; when touching the furface of the fore, once in two or three days, with lunar cauftic or lapis infernalis, will make the floughs throw off; and for the moft part their place will be fupplied with healthy granulations; after which, the cure commonly proceeds without interruption.

In defcribing this variety of exoftofis, we have repeatedly mentioned the pain which attends it; a fymptom which always takes place; at leaft I never met with an inftance of the contrary. Venereal nodes, particularly thofe on the head, are not indeed always accompanied with much pain, but merely with a flight uneafinefs. This variety, however, of node

does

does not originate from the bone, but proceeds merely from an affection of the periosteum. In this case the tumor commonly subsides entirely, either by the effects of mercury alone or the application of a blister: But in the other, if the bone is affected in any considerable degree, the tumor never subsides, if a large portion of the bone does not exfoliate. Even after every other symptom of the disease is removed, these tumors in the bones continue equally fixed and large as they were at first. We judge that a node proceeds from the bone itself; by the pain, as we have just observed, being acute; by the tumor being considerably harder than when the periosteum only is affected; by its advancing more slowly than the other, and continuing fixed and permanent, notwithstanding all the applications we make to remove it.

We come now to speak of the treatment of spina ventosa, or that variety of exostosis which we suppose to originate from scrophula; and I am sorry to observe, that

I have nothing ſatisfactory to offer upon it. Fomentations, ointments, plaſters, and a variety of other remedies, have been recommended; but I know of none that any advantage has ever been derived from. Tumors of this kind which appear formidable at firſt, will ſometimes indeed continue ſtationary, either from the ſcrophulous diſpoſition in the ſyſtem being checked by cold bathing, or ſome other ſimilar remedy; or from ſome change taking place in the conſtitution, with the nature of which we are perhaps altogether unacquainted. But this is a rare occurrence: For in general, notwithſtanding all the remedies we employ, a ſpina ventoſa, from its firſt appearance, proceeds in a gradual manner to become worſe.

When the diſeaſe appears at the ſame time in different parts of the body, all we can with propriety attempt, is to ſupport the conſtitution with a proper diet. To adviſe bark and cold bathing as the beſt ſtrengthening remedies; and when the pain is ſevere, to endeavour to render it moderate

moderate by adequate doſes of opium. But when confined to one part, as often happens in the knee and other large joints in caſes of white ſwelling, it becomes frequently adviſable to remove the diſeaſed part by an operation. In affections of the joints, it has been the common practice in this ſituation to amputate the diſeaſed limbs entirely. But an attempt has lately been made by Mr Park, an ingenious ſurgeon of Liverpool, to ſave limbs that are thus diſeaſed, by removing the heads of the affected bones only, and afterwards healing the ſore at which they were taken out. In treating of the operation of amputation, I ſhall enter more fully into the conſideration of this; for it is highly deſerving of notice: At preſent I ſhall only remark, that there is cauſe to fear that it will not prove ſo generally uſeful, as at firſt view might be expected. But where theſe ſwellings occur on the middle of bones, the practice may be purſued which I have already adviſed in thoſe caſes of exoſtoſis proceed-

ing

ing from external violence: The ſwelled portion of bone may be cut out when ſeated on any of the long bones of the extremities; and the whole bone may be removed when any of the ſhort bones of the hands or feet are affected.

CHAP.

CHAPTER III.

Of Wounds,

SECTION I.

Of Wounds in general.

VARIOUS definitions have been given of a wound; but few if any of them appear to be exact. Boerhaave defines a wound to be, a recent, bloody ſolution of continuity, in any ſoft part, by the motion, preſſure, or reſiſtance of ſome hard or ſharp body. By Sauvages, it is ſaid to be a mechanical diviſion of any fleſhy part, attended with a ſeparation of the parts newly divided, together with a diſcharge

discharge of blood and a tendency to inflame and suppurate. And Ludwig defines a wound to be a morbid division of parts which in a state of health ought to be united.

These are the definitions of this term which have been most generally adopted; but it is evident that none of them are correct. A part may be deeply cut, even large blood-vessels may be divided, without any discharge of blood taking place, as sometimes happens in lacerated wounds, and in those attended with much contusion: And where the smaller vessels only are divided, the discharge of blood very commonly ceases in the course of a few hours from the time that the wound was inflicted.

The definition recited above from Mr Sauvages is too extensive: It comprehends a period or stage of wound which does not always exist, viz. a tendency to suppurate. We know that wounds frequently terminate in gangrene, and even in death, without any previous suppuration; while

while in other inſtances they heal by the firſt intention, and their edges adhere to each other without any appearance of pus.

Neither is Dr Ludwig's definition of a wound correct: Parts which ought to be united, may be divided without being wounded. Thus a blood-veſſel, nerve, tendon, or muſcle, may be completely ruptured either by a violent ſprain or a contuſion; but unleſs the correſponding ſkin and other teguments are divided, we do not ſay that ſuch parts are wounded. Nor are theſe affections confined to the ſmaller muſcles and tendons; for inſtances often occur of the different parts even of the largeſt muſcles being thus violently ſeparated from each other.

Every recent ſolution of continuity in the ſofter parts of the body, when attended with a correſponding diviſion of the teguments, may be denominated a wound.

From this definition of wounds, it is evident that they will exhibit much variety in their nature and appearances.

This

This will arise from different causes, but more particularly from the nature of the injured parts; from the manner in which they have been produced; and from their extent.

Thus wounds in muscular parts are different, both in their nature and appearances, from such as affect membranous or tendinous parts only. Wounds made with a sharp cutting instrument are materially different from such as are attended with contusion or laceration: And punctured wounds exhibit very different appearances, and for the most part are productive of very different effects, from such as are more free and extensive. In the subsequent parts of this section these varieties in wounds will be considered. In the mean time, we shall give a description of the phenomena which usually take place in the most frequent form of this affection, what may be termed a Simple Incised Wound; by which both the theory and practice which we mean to inculcate will be rendered more intelligible.

On the inſtrument being withdrawn with which an inciſed wound has been made, the firſt appearance we take notice of is a ſeparation to a certain extent of the divided parts; which is always in a greater or leſſer degree, according to the depth and length of the wound, and according as the fibres of the injured part are divided more or leſs tranſverſely. Thus a wound even of conſiderable length, if it runs in the ſame direction with the fibres of a muſcle, will be attended with little retraction of the ſkin, while a large vacuity will take place in a wound perhaps of leſs extent where a ſtrong muſcular part is cut directly acroſs. Nay, in this laſt caſe, the ſeparation of the divided parts is in ſome caſes ſo conſiderable, as to give cauſe to ſuſpect that a portion of them has been removed; while in the other it is often ſo trifling, that even an extenſive wound will have the appearance of a ſtraight line only; a circumſtance by which practitioners have been often led to conſider as of no great importance, wounds

which in their conſequences have proved to be formidable; and by which the propriety of examining every wound with attention is ſtrongly pointed out.

The next appearance which uſually takes place in wounds, is a diſcharge of blood to a greater or leſſer extent, in proportion to the ſize of the cut, and to the number and ſize of the veſſels that are divided; at leaſt this is the caſe in wounds made with a ſharp cutting edge. Where the parts have been much bruiſed or lacerated, we have already remarked, that even large blood-veſſels may be divided without any hemorrhagy enſuing.

For the moſt part, the diſcharge of blood proves ſo alarming that means are employed to ſtop it; but when this is either neglected or not conſidered as neceſſary, if the arteries that have been cut are not large, the irritation produced by the wound itſelf, as well as by the free acceſs of the external air, excites in the divided extremities of theſe veſſels ſuch a degree of contraction, that in this way alone

alone the hemorrhagy is ſoon checked. The diſcharge of red blood becomes gradually leſs: It then ceaſes entirely, and is ſucceeded by an oozing of a ſerous fluid, which in the courſe of a few hours likewiſe ſtops, when the whole ſurface of the ſore is found either ſomewhat dry or even parched; or it is covered over with a cake of coagulated blood.

In this way nature ſeems to operate in putting a ſtop to hemorrhagies produced by wounds. Another idea is commonly entertained indeed of this ſalutary proceſs: It is ſuppoſed that ſmall coagula of blood plug up the orifices of the veſſels, and that in this manner they are preſerved of the ſame ſize as before they were divided.

This, however, is by no means the caſe, as is clearly proved on diſſecting the ſtumps of patients dying after amputations. Inſtead of the mouths of the divided arteries being plugged up with blood, they are found perfectly empty and contracted for a conſiderable ſpace

from their extremities; nay, in moſt inſtances, they become firm ſolid cords, ſo as never afterwards to be capable of receiving a ſupply of blood. Nor is this proceſs of nature difficult to explain. It is arterial hemorrhagies we are now conſidering; for wounded veins, if they be not compreſſed between the injured part and the heart, ſeldom diſcharge ſo much blood as to prove alarming. Now, as arteries are poſſeſſed of a ſtrong contractile power, they will readily exert this power on the irritating cauſes which accompany wounds, being applied to them. In this manner the blood is prevented from flowing in its uſual channel; but nature does not fail to provide a different route for it: It is ſoon forced through the contiguous anaſtomoſing arteries, which at laſt become ſo much enlarged, as to allow it to paſs with freedom; while, in the mean time, that contraction of the divided arteries, produced at firſt, as we have obſerved, by irritation, terminates at laſt in a firm adheſion of their ſides, in conſequence of that

that inflammation with which every wound is in ſome degree accompanied.

The pain attending a wound made with a clean cutting inſtrument, is in general inconſiderable at firſt, unleſs a nerve or a tendon has been partially divided; in which caſe it proves commonly ſevere. But in every wound the parts become painful in the courſe of a few hours from the time of the injury being inflicted. They become red, tenſe, and even conſiderably ſwelled: And where the wound is extenſive, an increaſed degree of heat takes place, together with thirſt, quickneſs of pulſe, and other ſymptoms of fever.

In ſome inſtances theſe ſymptoms continue to increaſe, and to prove more and more ſevere, till at laſt they terminate in mortification; but for the moſt part they are carried off in a more favourable manner. The ſurface of the wound, which for ſome time remained perfectly dry, is gradually rendered moiſt and ſoft by a thin ſerum oozing into it; which being

allowed to collect, is at laſt, by the heat of the affected parts, and in ſome caſes by the application of artificial heat, converted into purulent matter: while in general, the preceding ſymptoms of pain, tenſion, and fever, abate more or leſs quickly according as this formation of matter is more or leſs plentiful. From the time that ſerum begins firſt to ooze into the cavity of a wound, the tenſion and pain begin to abate, and for the moſt part theſe ſymptoms diſappear on a free ſuppuration taking place, by which the moſt natural balſam is produced that can be applied to wounds.

From this hiſtory of the progreſs of wounds, it is evident that all the ſymptoms we have enumerated, are ſuch as originate from inflammation. They are exactly ſuch, indeed, as accompany a common phlegmon. The pain, redneſs, and tenſion, which always to a certain degree take place in wounds, are the leading ſymptoms of phlegmon; and the ſerous effuſion into the cavities of wounds, with the

the ſuppuration which enſues, are circumſtances exactly ſimilar to thoſe which occur in all caſes of abſceſs. A wound may therefore be conſidered as an exciting cauſe of inflammation; and ſome advantage, I think, may be derived in practice, from viewing it chiefly in this light. This, however, will more clearly appear, when we come to ſpeak of the method of cure; when it will be rendered obvious, that in the treatment of wounds, thoſe means prove uniformly moſt effectual which are moſt powerful in preventing violent inflammation.

The deſcription I have given of wounds relates to the moſt ſimple and leaſt hazardous kinds of them; in which the injury has been done, as was already remarked, with a ſharp cutting inſtrument, and where the parts have been laid freely open. In ſuch circumſtances, when no organ of much importance to life has been divided, and when the cut is ſeated in a fleſhy muſcular part, if nature be not impeded in her operation, the whole ſur-

face of the ſore becomes covered with granulations almoſt immediately on a free ſuppuration taking place; and theſe continuing to advance, a cure is at laſt accompliſhed, in the manner to be deſcribed in a ſubſequent part of this work *.

This happy termination of a wound, however, may be prevented by various cauſes. It requires, indeed, the concurrence of many circumſtances. Theſe we ſhall afterwards have occaſion to treat of in a particular manner. At preſent I ſhall enumerate thoſe only which ariſe from the nature of the wound.

In a free inciſed wound, the inflammation which takes place is not in general more than is neceſſary for the production of that degree of ſuppuration which we have ſhown to be requiſite; and in wounds of this deſcription, the matter gets freely off, being commonly diſcharged almoſt as ſoon as it is formed, points of the utmoſt moment

* Vide Chap. IV. Section II. § 2.

moment in the management of wounds. It is known indeed to every practitioner, that the cure of wounds cannot be accomplished when the inflammation either runs too high, or when a free outlet is not given to the discharge: Every circumstance therefore in the nature of a wound, which tends either to excite an undue degree of inflammation, or to produce a lodgment of matter, must be considered as unfavourable: And hence punctured wounds, and those that are attended with contusion or laceration, are particularly hazardous.

Punctured wounds prove often more dangerous than wounds of greater outward extent, from large blood-vessels and other deep-seated parts being hurt; and they are commonly more painful, being frequently attended with a partial division of contiguous nerves or tendons; a circumstance productive of more violent pain than usually ensues from a free division of them. But the greatest risk in a punctured wound arises from the

lodgement of matter; a circumſtance which takes place more readily in this than in any other variety of wound; and to obviate which, the niceſt attention on the part of practitioners is often requiſite.

In contuſed and lacerated wounds, if the violence with which they have been inflicted has not been conſiderable, the parts will frequently recover their tone; the attending inflammation will not run high; and a free ſuppuration being induced, a cure will at laſt be accompliſhed in a manner ſimilar to what we have deſcribed in caſes of ſimple inciſed wounds. But it often happens that the contiguous parts are ſo much injured as to give no cauſe to expect ſuch a favourable event. When violently contuſed, the texture of the parts affected is ſometimes ſo completely deſtroyed, that the circulation is ſtopped, and mortification enſues; and where this proceeds to any conſiderable extent, the danger attending it is always great. Again, in wounds attended with much

much laceration, mortification is apt to occur from a different cauſe. The pain and irritation attending them proceeds ſometimes to ſuch a height, as to induce a great degree of inflammation; which, notwithſtanding the means uſually employed to prevent it, very frequently terminates in the manner we have mentioned. Indeed, ſo far as my obſervation goes, inflammation induced by this cauſe is more apt to terminate in gangrene than any other inflammatory affection proceeding from external violence.

In forming a prognoſis of wounds, the circumſtances we have juſt been conſidering merit our particular attention: But there are others which ſhould likewiſe be kept in view; and theſe more eſpecially are, the age and habit of body of the patient; the texture of the wounded part; the part of the body in which the injury is inflicted; and the riſk of parts of much importance to life being ultimately brought to ſuffer, although not immediately injured.

Thus,

Thus, it is obvious, that in healthy conſtitutions, wounds will, cæteris paribus, be leſs hazardous than in people of diſeaſed habits of body; for we commonly obſerve, where the ſyſtem is tainted with any diſeaſe, that even the ſlighteſt wounds are apt to become troubleſome, and to degenerate into ſores which do not heal till the diſeaſe of the ſyſtem is removed: We alſo obſerve, that the healing of ſores depends in ſome meaſure upon the age of the patient; and that the cure is for the moſt part more quickly accompliſhed in youth and in middle age, than in very advanced periods of life.

There are many exceptions, however, to this; for whenever the natural firmneſs and elaſticity of the muſcular fibres are not much impaired, we do not find that old age proves unfavourable to wounds. When the conſtitution is ſuch, that any wounds which take place, are found to excite a due degree of inflammation, old age ought by no means to be

conſidered

considered as a disadvantage. On the contrary, in such circumstances, it proves always salutary, by tending to render the symptoms more moderate than they are apt to be in more early periods of life. This is particularly the case in extensive wounds of every kind: And we observe it in a remarkable manner in chirurgical operations; especially in lithotomy, and in the amputation of any of the extremities; which have commonly, in the course of my experience, proved more successful in healthy old people than at any other period of life, and evidently from the cause I have endeavoured to point out.

With respect to the texture of a wounded part, it is well known that wounds heal not only more quickly but more kindly in some parts than in others. Thus wounds of the cellular substance heal more easily than such as pass through any of the muscles; while those that are confined to the fleshy parts of muscles prove much less formidable than wounds of tendinous or ligamentous parts; for, besides occasioning

occaſioning leſs pain and inflammation, they do not ſo readily produce any permanent inconvenience. The deepeſt cuts may be inflicted on the belly of a large muſcle, with little or no riſk of any inconvenience being experienced from them; but the contiguous joints are apt to remain ſtiff and unmanageable, when the tendons which paſs over them are much injured.

When wounds penetrate to a ſtill greater depth, ſo as to do any material injury to bones, they prove always more tedious and uncertain than when ſoft parts only are divided; for in ſuch caſes wounds ſeldom heal till ſome portion of the bone exfoliates; a proceſs which very commonly requires a conſiderable length of time to accompliſh *.

Wounds in glandular parts are more to be dreaded than the mildneſs of the ſymptoms which appear at firſt would lead us to imagine. When ſmall glands only are divided, they often heal readily; but when the

* *Vide* Chap. III. Sect. VII.

the larger glands are injured, the ſyſtem is not only apt to ſuffer from the ſecretion for which they are intended being impeded; but the ſores which enſue very commonly become fungous, and are cicatriſed with difficulty.

When any of the larger lymphatic veſſels are wounded, the cure often proves tedious from a conſtant diſcharge of a thin limpid fluid, by which the formation of a cicatrix is prevented: And when at laſt a cure is obtained, very troubleſome ſwellings are apt to occur in the under part of the limb, from the obſtruction given to the lymph in its paſſage to the heart by the newly formed cicatrix. Of this every practitioner of experience muſt have ſeen ſome inſtances. I have met with many; particularly after the extirpation of ſchirrous glands when deeply ſeated in the arm-pit. In ſuch caſes the large lymphatics of the arm are very frequently cut, and very obſtinate œdematous ſwellings of the whole member are apt to enſue.

When

When a large nerve is completely divided, the pain attending it will be inconſiderable; but the parts beneath will be deprived both of their ſenſibility and power of motion, unleſs they are ſupplied with ſome other branches. But when a nerve is only punctured, the pain which takes place is commonly ſevere: And this is apt to be followed with a high degree of inflammation; ſmart fever; ſubſultus tendinum; convulſions; and even death. Theſe violent appearances, however, do not often occur in northern climates; but they are frequent in warm countries, where they are apt to terminate in a ſymptom which often proves fatal, the locked jaw.

In wounds of the larger blood-veſſels, our firſt object is to diſcover, whether the hemorrhagy which enſues, proceeds from arteries or veins; for in general no material inconvenience is experienced from wounds even of the largeſt veins, while much danger is to be dreaded from wounds of the larger arteries. If the

the artery is ſo ſituated that a ligature cannot be put round it, the loſs of blood will probably ſoon prove fatal: And even where the diſcharge of blood can be ſtopped with eaſe, if the limb has no other artery to ſupply it, a mortification is to be dreaded. It often happens, indeed, even that large arteries are ſecured with ligatures without any detriment to the parts beneath: But in this caſe there are other arteries or anaſtomoſing branches of ſuch a ſize as to give paſſage to a ſufficient quantity of blood.

The ſite of a wound is alſo an object of importance. Thus wounds in the extremities, when confined to parts lying above any of the hard bones, are not to be conſidered as ſo hazardous as thoſe which paſs into any of the joints: And in other parts of the body, wounds which penetrate any of the larger cavities, prove always more dangerous than thoſe which do not run to ſuch a depth.

This will proceed from different cauſes. The danger will be increaſed by the

chance of ſome organ of importance being directly injured: By air, and in ſome caſes by extraneous bodies, finding acceſs to cavities which nature never meant to be expoſed: And laſtly, by the lodgement of matter; a circumſtance always with much difficulty avoided in wounds which penetrate to ſuch a depth.

We have likewiſe to conſider, that although no organ of importance may be directly wounded in ſuch a manner as to produce immediate death, yet that much danger may ariſe from a variety of circumſtances; and that wounds may eventually prove mortal which at firſt were not attended with any obvious riſk.

Thus wounds in the lungs, and other viſcera, prove ſometimes fatal, from continuing to diſcharge ſuch quantities of blood for a conſiderable time as at laſt deſtroy the patient; although at firſt the diſcharge might not appear to be of much importance. The ſtomach, and different parts of the alimentary canal may be injured in ſuch a manner as to terminate

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in death without exhibiting any immediate appearance of danger. The external coat of the aorta has been removed by the point of a ſmall ſword; and the wound has been nearly healed when the patient died ſuddenly from a rupture of the artery: And wounds of the gall-bladder, or of its excretory duct; of the receptaculum chyli; of the thoracic duct, and ſome other viſcera; may for ſeveral days afford no ſuſpicion of danger, and yet terminate fatally at laſt.

Wounds ſometimes prove fatal from inflammation ſpreading to contiguous viſcera, which were not at firſt injured; and wounds, which have at firſt appeared to be of little or no importance, have at laſt terminated in the worſt manner, merely by miſmanagement, either in the application of dreſſings or bandages, or in the conduct of the patient with reſpect to food, drink, and exerciſe; for it is well known, that much miſchief has been done by improper dreſſings, and eſpecially by too tight bandages; and we likewiſe

 know,

know, that miſconduct with reſpect to food is daily the cauſe of wounds going wrong, which otherwiſe would probably have done well.

It thus appears, that a variety of circumſtances fall to be conſidered, to enable us to judge of the probable termination of wounds. In doing this with accuracy, practitioners of experience have frequent opportunities of ſhowing their ſuperiority. This ſubject ought therefore to be conſidered as highly important by all who wiſh to diſtinguiſh themſelves. A minute knowledge of anatomy, a cool temper, and a ſteady hand, will enable any practitioner, even with no great experience, to perform many of our moſt important operations ſufficiently well: And accordingly in different hoſpitals, we daily meet with good operators; but we do not often find ſurgeons poſſeſſed of that knowledge in the prognoſis of chirurgical diſeaſes which might be expected; that attention being ſeldom beſtowed which is neceſſary to attain it.

SEC-

SECTION II.

Of the Cure of Simple Inciſed Wounds.

IN the management of wounds, the firſt object requiring our attention is the hemorrhagy; more eſpecially when it is profuſe. The ſafety of the patient requires it: The alarm which it gives, not only to byſtanders, but to the practitioner himſelf, renders it neceſſary. Nor can the real ſtate of a wound be diſcovered with accuracy till the diſcharge of blood be checked.

Hemorrhagies are moſt immediately ſtopped by preſſure applied to that part of the divided artery which is next to the heart: This preſſure is made by the tourniquet, when the wound is in any of the extremities *; and by the hands of aſſiſtants, in wounds of the trunk of the body or of the head.

* *Vide* Chap. VI.

In this manner, if the preſſure is properly applied, almoſt any hemorrhagy may be ſtopped till the wounded veſſels can be ſecured with ligatures; which we ſhall hereafter ſhow to be the ſafeſt, as it is the eaſieſt method of preventing patients with ſuch injuries from ſuffering *. Much indeed has been ſaid, even of late years, of the inconveniencies which ligatures are ſuppoſed to induce: But this has proceeded either from the intereſted views of ſome individuals who may have wiſhed to eſtabliſh the reputation of different ſtyptics; or from the groundleſs fears of young practitioners. Where the contiguous nerves, or even where much of the ſurrounding muſcular parts, are included in ligatures, ſevere pain, and other troubleſome ſymptoms, will no doubt be induced; but this is not the fault of the remedy, but of the method of uſing it. Indeed this is ſo obviouſly the caſe, that reaſoning in the farther ſupport of it does not ſeem to be neceſſary;

* *Vide* Chap. VI.

necessary; for every practitioner of experience will admit, that a proper application of ligatures is seldom if ever productive of any material inconvenience, and that we can depend on it with more certainty than on any other remedy for putting a stop to hemorrhagies from wounded arteries.

In the preceding editions of this work, when treating of the method of applying ligatures to arteries, I gave it clearly as my opinion, that it may be best done by the tenaculum, an instrument represented in Plate V. fig I. And after much additional experience of its utility, I now think it right to say, that I am more and more convinced of its being much superior to the needle; which cannot be used without a portion of the contiguous soft parts being included in the ligature; a circumstance which in every instance we should endeavour to avoid. Many imagine that the tenaculum may be used with safety in securing arteries of a middling size, while they are afraid of cutting those of a small

ſize aſunder, if ſome of the contiguous cellular ſubſtance be not included along with them: And in tying the large trunks of arteries, they ſuſpect that the ligatures would be apt to be forced off by the ſtrong pulſations of theſe veſſels, if they were not ſupported by being firmly fixed in the contiguous parts. I have not, however, had a ſingle inſtance of obſerving that either of theſe objections to this practice is well founded. For a number of years paſt, I have laid aſide the needle, for the purpoſe of applying ligatures to arteries, almoſt entirely; and in the courſe of that time, I have employed the tenaculum indiſcriminately in hemorhagies from arteries of all ſizes.

Wounded arteries are ſeldom ſo ſituated as to prevent the hemorrhage from being ſtopped in the manner we have mentioned: For when they lie at the bottom of deep wounds, with narrow contracted mouths, the wound may commonly be enlarged ſo as to admit of their being tied with ligatures; and for the moſt part

part it may be done with safety. Where the enlargement of a wound is not clearly necessary, no person of experience would advise it; but the practice is always safe and proper in hemorrhagies proceeding from arteries lying so deep that ligatures cannot otherwise be applied to them. As this practice, however has been very inadvertently condemned by some practitioners in every instance, from their supposing it to be rarely if ever necessary, a timidity has been thereby introduced, which, in various instances, has been the cause of mischief: Patients have been tormented with the application of tight bandages, and with the trial of different styptics, which seldom if ever succeed, when the hemorrhagy might have been stopped in the most effectual manner by a small enlargement of the wound: Nay, many limbs have been amputated from the same cause, which might easily have been saved; particularly in cases of compound fracture, where a hemorrhagy, proceeding from

from a deep-ſeated artery which cannot be eaſily tied, is too frequently conſidered as a ſufficient reaſon for removing the limb. From particular circumſtances, in a few caſes of compound fracture, it may happen that hemorrhagies cannot be ſtopped without laying the injured parts ſo extenſively open, as might induce more hazard than amputation itſelf. This, however, is a very rare occurrence; and it will ſeldom take place where the caſe has been properly treated from the beginning.

When the injured artery runs in the ſubſtance of a bone, no ligature, it is evident, can be applied to it; and therefore, in ſuch a caſe, enlarging the wound could not be attended with much advantage. But arteries in this ſituation are never ſo large as to lead us to be much afraid of any hemorrhagies that may proceed from them; nor does it often happen that they continue to bleed long after they have been completely divided. An artery thus ſituated, being merely

wounded,

wounded may discharge a great deal of blood; but I have met with different instances of the hemorrhagy stopping almost immediately on the vessel being cut across. Authors indeed have said, that the utmost danger has been induced by arteries surrounded with bone being wounded; nay, that death itself has happened from this cause, owing to the impossibility of including them in ligatures. I am convinced, however, that it is a partial division only of such arteries that will ever produce hemorrhagies of any importance; for they are always small, and they never adhere so firmly to the surrounding bone, as to be prevented from contracting on being freely divided.

Where the discharge of blood proceeds from large vessels, the means we have mentioned are the most effectual for putting a stop to it. But when it occurs from an infinite number of small arteries over the whole surface of a wound, other remedies must be employed. We must here refer, however, to a subsequent chapter

chapter of this work, where this ſubject will fall more properly to be fully conſidered *.

The hemorrhagy being ſtopped, the next object requiring our attention is the removal of any extraneous body that may have been admitted: And where ſuch ſubſtances are not deeply ſeated, this is always done both with moſt eaſe and ſafety with the fingers alone; for when forceps and other inſtruments are employed, we can ſcarcely fail to injure the contiguous parts.

The examination of wounds, with a view to diſcover extraneous bodies, ought to be made with much delicacy; for handling the parts roughly gives unneceſſary pain, and is beſides apt to induce a degree of inflammation, which often proves hazardous.

But although it is always proper to accompliſh the removal of extraneous bodies with as little pain to the patient as poſſible; yet wherever we have any certainty

* *Vide* Chap. VI.

tainty of bodies of this kind being lodged, we ought by all means to proceed with firmnefs, in the firft place, in difcovering their fituation, and afterwards in removing them, excepting in a few particular cafes where this cannot be done without much rifk of injuring parts of real importance to life. In fuch cafes the judgment of the practitioner muft decide between the danger that may probably enfue from the extraneous body being allowed to remain, and that which might arife from his proceeding to remove it immediately.

Modern authors in general ftrictly forbid much affiduity in the removal of bodies of this kind: For they very properly obferve, that in former times much mifchief was done by exploring wounds with more exactnefs than was requifite; by which unneceffary pain was induced, and cures thus rendered more tedious than they otherwife would have been.

But

But in this matter the moderns ſeem to have gone from one extreme to another: For although much handling of ſores, and a free uſe of probes, forceps, and other inſtruments, is ſeldom neceſſary, it is equally true, that by allowing extraneous bodies, which might have been removed at firſt, to remain in wounds, much future pain and inflammation have been occaſioned.

In ſupport of the practice we are told, that various caſes are on record of extraneous bodies continuing to lodge in different parts of the body without any inconvenience; that this will commonly happen when the ſubſtance is not of a ſtimulating nature; and when it is of ſuch a form or texture as to induce pain, that it will ſoon excite ſuch a plentiful ſuppuration as will quickly throw it out in a much more eaſy manner than if it had been removed at firſt. In anſwer to this, I ſhall obſerve, that where extraneous bodies in wounds cannot be removed without giving the patient a great deal of pain; and

and efpecially where there is any rifk in doing fo of large contiguous blood-veffels being wounded; we ought by no means to make the attempt. In fuch cafes we ought certainly to truft to the fubfequent fuppuration for throwing them out: But they ought always to be taken out immediately, when it can be done with tolerable eafe, or without injuring any parts of importance. In this way a more expeditious cure is obtained, and we accomplifh our purpofe in an eafier manner, than could be done in any future ftage of the fore. For in a recent wound, while no inflammation or tenfion takes place, the contiguous parts eafily ftretch and yield to the extraction of any fubftance that may be lodged in them, if it be not of an angular form, and if the operation, inftead of being performed quickly, be done with flownefs and caution: Whereas, when the contiguous parts become ftiff and painful, which they always do in the courfe of a fhort time, any fubftance lodged in them is removed with much pain and difficulty:

ty: For even after a free ſuppuration has taken place, although the parts will be conſiderably relaxed, yet ſtill they will be more ſtiff and tenſe than they were at firſt; and the opening through which the ſubſtance is to be extracted will likewiſe be diminiſhed.

Another very material advantage is gained by the immediate removal of extraneous bodies from wounds. While a ſore is recent, patients, for the moſt part, will allow every thing to be done which the practitioner in attendance may think neceſſary; while they frequently refuſe, in future ſtages of the ſore, to ſubmit to any thing beſides the uſual dreſſings.

It may be remarked in this place, that of the extraneous bodies that are apt to be lodged in wounds, ſome are more harmleſs than others. A prudent practitioner will therefore be more or leſs anxious in attempting to remove them. Thus we all know, that a lead-ball may be lodged very deeply for a great length of time, without being productive either of pain or inconvenience;

convenience; while a ſplinter of wood, glaſs, or iron, or even a bit of cloth, will often create a great degree of uneaſineſs. When, therefore, it is known that a lead-ball is the only ſubſtance that is lodged, if it cannot be eaſily removed, we have at leaſt the ſatisfaction of being aſſured that it will not probably do much harm. We will therefore allow it to remain, either till it is looſened by a plentiful ſuppuration, or till ſome future period, when it may perhaps be diſcovered in a different ſituation, ſo as to be taken out with ſafety at a counter-opening: While, on the other hand, when ſuch ſubſtances are lodged in wounds as will probably excite much irritation and pain, it will be much for the intereſt of the patient, and will be the means of preventing much perplexity and trouble to the ſurgeon, to have them removed as ſoon as poſſible after the injury is inflicted.

We have obſerved above, that in removing extraneous bodies from wounds, it ſhould be done with the fingers alone,

rather than with forceps. Some few exceptions may occur to this, which we ſhall afterwards have occaſion to mention. But ſubſtances are ſometimes lodged in wounds that cannot be eaſily taken out either with the fingers or forceps. This is particularly the caſe with ſand, duſt, and ſmall pieces of glaſs. Theſe are beſt removed by bathing the parts in warm water, or by pouring warm water upon them; ſqueezing the water gently from a ſponge, or injecting it ſlowly with a ſyringe.

In performing even this very ſimple operation of waſhing a wound, as well as in extracting foreign ſubſtances with the forceps, or in any other way, it is proper to obſerve, that much advantage may be derived from placing the patient in ſuch a poſture as tends moſt effectually to relax the injured parts, ſo as to obtain as wide a ſeparation as poſſible of the lips of the wound. I have ſeen different inſtances, where, from want of attention to this circumſtance, patients have ſuffered much unneceſſary

unneceffary pain; where, after various trials, the practitioner has been obliged to defift without accomplifhing his object; and where another practitioner has proved at once fuccefsful, merely by putting the wounded parts in a relaxed pofition.

After paying due attention to thefe circumftances refpecting extraneous bodies lodged in wounds, our next object is the conduct of the cure.

In incifed wounds, a feparation occurs of the parts that have been divided; and as every wound proves a caufe of irritation, the feparation which takes place at firft continues for fome time to increafe, merely by the contractile power of the injured mufcles. In the ufual way of covering wounds with lint, or with pledgits of ointments, and where the parts have not been previoufly drawn together and retained in their fituation, an effufion of a ferous fluid foon takes place into the cavity of the fore, from the fmall veffels that have been cut. This is afterwards

converted into purulent matter: In a ſhort ſpace of time the parts are found to be covered with an infinite number of ſmall ſprouts or granulations; and theſe having advanced to a certain extent, a dry pellicle of ſcarf-ſkin, termed a Cicatrix, forms over the whole extent of the wound, and thus the cure is completed.

In this manner the healing of wounds is effected, when nature is not aſſiſted by art, or when her operations are only promoted by proper coverings, and protection merely given to ſuch parts as are injured. But although, in ſome caſes, this is our only reſource; and although even in this way practitioners have it always in their power to forward the cure of ſores; yet it is liable to many very important objections, which may be obviated by a different treatment.

When a wound is healed in this manner, if the divided parts have ſeparated to any conſiderable extent, the ſuppuration which enſues will be plentiful; by which, if the conſtitution is weak, the patient is

apt

apt to be materially injured. In extensive sores, this method of cure is always tedious; when deep muscular parts are injured, the motion of the contiguous joints is apt to be affected; and the cicatrix of a large wound, when cured in this manner, is always stiff, unseemly, and disagreeable; nor is it possessed of that strength and firmness which the parts beneath require for their protection.

Patients, however, are seldom under the disagreeable necessity of submitting to these inconveniencies: For in general, wounds may be cured in a more easy as well as in a more agreeable manner: We know from experience, that two inflamed surfaces of an animal body, when kept in contact, will soon adhere together. This was probably at first pointed out by accident; but practitioners now derive much advantage from the knowledge of it, not merely in the management of wounds, but in a variety of important operations: By drawing such parts as have been divided into contact with each other; and

taking care to have them all as completely covered as possible with the cutis vera, very extensive wounds are, in this manner, often quickly cured; the power of moving and of using limbs with freedom is often preserved which otherwise would be lost; the scar or mark which remains is seldom of any importance; and the wounded parts have the advantage of being sufficiently protected.

It has long been known that parts recently divided will unite together, if kept in contact for a sufficient length of time. The cause, however, of this phenomenon has not hitherto been clearly explained: The prevailing idea is, that it proceeds from a direct inosculation or junction of the different parts that have been divided; and that those parts only will adhere together which were formerly united. Thus it is imagined in the healing of wounds in this manner, that a divided artery on one side of a cut must be made to adhere directly with its fellow on the opposite side; that veins

veins must unite with veins; muscular fibres with fibres of a similar nature, &c. But although it is necessary in practice to keep this idea so far in view, as to place parts that are to be healed as exactly opposite to each other as possible; yet this proceeds more from a requisite attention to symmetry and neatness after the cure is performed, than from any other cause: For it is certain, that no such exactness is required for the mere adhesion of the divided parts, and whoever doubts of the fact may with little difficulty prove it experimentally. A membrane may be made to adhere to a bone; and the divided end of an artery or a vein will unite with almost any substance with which it is kept in contact.

It is indeed true, that blood circulates through the cicatrix of a wound; a fact which few will doubt, and which probably gave rise to the opinion we are now considering. But we have reason to believe that this circulation does not take

place immediately on the formation of a cicatrix. It ſeems rather to be an after proceſs of nature, and is evidently accompliſhed by an infinite number of ſmall vaſcular ſprouts or newly created blood-veſſels, which proceed from the larger arteries and veins on each ſide of the wound, and inoſculate with each other, ſo as to form a ſufficient circulation in the parts through which they paſs. At leaſt I have found, in different inſtances, on examining the cicatrix of a large wound, that it was always very vaſcular; and I conclude that it happens from a new formation of ſmall blood-veſſels, as the divided extremity of every blood-veſſel, whether artery or vein, when of ſuch a ſize as to be eaſily diſtinguiſhed, is always ſhut, and even obliterated for a certain ſpace from the point where the injury happened, in the ſame manner as in arteries that are tied with ligatures in caſes of amputation and other capital operations. And if this happens in veſſels of a large ſize, there is rea-

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ſon to ſuppoſe that it does ſo in thoſe that are ſmaller.

In confirmation of this opinion, we may obſerve, that a circulation of blood betwixt adhering ſurfaces, takes place where inoſculation of the kind in queſtion can never occur, from no previous diviſion of blood-veſſels having been made. Thus, when the ſkin of two contiguous fingers or toes becomes raw or tender, without any blood-veſſels being injured, it is difficult to prevent them from adhering; and when they do adhere, a free circulation is afterwards found to take place between them. Other inſtances might be adduced; but I notice this one, as it is not unfrequent, and as it is perfectly applicable to the preſent queſtion.

I therefore conclude, that wounds cured in this way, are healed in the ſame manner as adheſion is produced between inflamed ſurfaces, namely, by exſudation of the glutinous part of the blood from the extremities of the divided veſſels; which

which in the firſt place retains the parts together, and afterwards ſerves to ſupport the new formation of ſmall blood-veſſels, which nature puts forth as a farther and more certain means of retention.

I have entered into this phyſiological diſcuſſion, imagining that it tends to eſtabliſh a material point in practice. It has commonly been ſuppoſed, that the ſpace of twelve, fourteen, or fifteen days, is neceſſary for the complete adheſion of divided parts: A ſuppoſition which proceeds upon the idea that this adheſion is formed ſolely by the inoſculation of blood-veſſels. But if agglutination alone is neceſſary, in the firſt inſtance, to accompliſh this adheſion, it is evident that it may be effected ſooner. Accordingly, I have uniformly found divided parts adhering firmly about the fifth day: Nay I have known the bandages accidentally removed from wounds on the ſecond and third days, without any ſeparation of the parts newly united being the

the confequence. From this it appears, that a fhorter application of the ufual means of retention will anfwer than is commonly practifed. Surgeons term this treatment of fores, Healing by the Firft Intention; and as it is in every refpect the moft defirable method of cure, it fhould always be followed when practicable.

In fome varieties of wounds, different reafons occur to prevent us from curing them in this manner. Thefe we fhall afterwards have occafion to mention. But in the fimple incifed wound, where the injury has been inflicted with a clean-cutting inftrument, without producing puncture, laceration, or contufion, the only objection that can occur to it, is our not being able to draw the divided parts into contact, and to retain them in that fituation till they adhere together. This, however, will feldom happen, unlefs a lofs of fubftance takes place to a confiderable degree. Where a large portion of fkin, with the mufcles beneath, has

has been entirely cut out, it may in ſome caſes be impoſſible to bring the retracted edges of the wound together; but we may always make them approach ſo as to diminiſh the ſize of the ſore, and may thus have it in our power in every inſtance to forward the cure. In deep tranſverſe wounds, even where no ſubſtance is loſt, the retraction is often ſo great, as to render this practice ſomewhat difficult: But by placing the injured part in that ſituation which tends moſt effectually to relax the divided muſcles, we may effect our purpoſe almoſt in every inſtance. It is indeed ſurpriſing to ſee how completely divided parts will be made to approach, which, while the muſcles were upon the ſtretch, were ſeparated to a conſiderable diſtance from each other. We ſhould never therefore deſpair too ſoon; for even in the worſt caſes we ſeldom fail, by due perſeverance in this mode of treatment, to obtain ſome very eſſential advantage.

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When it is found that the divided parts may be drawn together, we have next to fix upon the beſt and eaſieſt method of retaining them in this ſituation during the cure. Various means are propoſed for this; namely bandages of different kinds, adheſive plaſters, and ſutures.

The ſides of longitudinal wounds, in any of the extremities, and of ſome wounds of the head, may be retained by the uniting bandage. But this ſeldom anſwers in the trunk of the body; nor can it ever prove uſeful in wounds, either in the legs or arms, that run tranſverſely: And even where there is reaſon to think that it will anſwer ſufficiently well for retaining the ſides of the wound in contact, we ought never to truſt to it entirely; for we cannot depend upon a bandage alone for preſerving the ſkin ſmooth and equal; a circumſtance of much importance in the cure.

The eaſieſt method of retaining the ſkin exactly in its ſituation, is by means of

of adheſive plaſters applied in the manner repreſented in Plate I. In ſome caſes plaſters alone prove ſufficient; but when much retraction is expected, the uniting bandage ſhould be applied over them whenever the direction of the wound renders it admiſſible.

Many practitioners, in all caſes of wounds, prefer adheſive plaſters to the uſe of ſutures; but it is in particular inſtances only that this preference is proper. Adheſive plaſters may be uſed with advantage in ſuperficial wounds that do not penetrate much deeper than the cellular membrane; and where there is a loſs of ſubſtance, to ſuch an extent as to prevent the ſides of a wound from being drawn cloſe together, they may be employed for the purpoſe of retaining the retracted parts as near as poſſible to each other. But in all wounds that penetrate to any conſiderable depth, and when their edges can be drawn into contact, the twiſted ſuture is by much the beſt for retaining them. For a deſcription

tion of this and other ſutures, we muſt refer to Chapter V. The common interrupted ſuture is indeed more frequently employed than the other; but it does not ſupport the parts with ſuch certainty; the ligatures are more apt to tear or cut out the parts which they ſurround; and they frequently leave diſagreeable marks.

It is a common opinion, we may remark, that adheſive plaſters and ſutures are admiſſible only in the recent ſtate of wounds. But however deſirable it may be, for various reaſons, to have the application of either of them made as early as poſſible; yet when neglected at firſt, they may be employed with advantage during any ſtage of the ſore: For we are wrong in ſuppoſing, as is commonly done, that wounded parts will not adhere when in a ſtate of purulency. I have repeatedly treated in this manner, ſores of two, three, and four weeks duration, and very commonly with advantage: Inſomuch, that I believe the practice

tice will generally ſucceed in every ſtage of a ſore when the retracted edges can be brought together.

Whether we employ adheſive plaſters or ſutures, we ſhould be very attentive in ſupporting the parts, as far as it can be done, by the poſture of the patient; for if this is neglected, ſutures of every kind will yield ſo as not to anſwer the purpoſe: And along with this, when plaſters are uſed, a farther advantage, as we have already obſerved, may be derived from a proper application of the uniting bandage; but for the reaſons given in the chapter on Sutures, a point that will alſo be farther taken notice of, when treating of the Hare-lip in Chap. XXXIII. neither this nor any other bandage can with propriety be employed along with the twiſted ſuture.

When a wound is treated in this manner, as ſoon as the retracted edges are drawn together and properly ſupported by plaſters or ſutures, no other dreſſings are neceſſary, excepting a thin covering

of

of soft lint to protect the parts beneath from cold; and with a view to prevent as much as possible any access to air, the lint should be spread either with some unctuous substance, or with mucilage of Gum Arabic, or any other inoffensive gum.

This being done, the patient should be desired to preserve the injured parts in the most favourable posture; and care should be taken to enjoin a well-regulated diet. If he is low and emaciated, he may with propriety have a small allowance of animal food; but when plethoric, or liable to inflammatory affections, and the wound extensive, a strict antiphlogistic course is requisite: For although inflammation to a certain extent may be necessary for the cure of wounds; yet a prudent practitioner will always guard against excess of inflammation, as productive of much mischief.

In open wounds, the most effectual application for removing extreme degrees of inflammation, is warm emollient cataplasms; but as they tend to induce the

formation of matter, and as this is directly oppoſite to our views in the mode of cure we are now conſidering, it is evident in ſuch circumſtances that they are inapplicable. But although warm emollients cannot with propriety be employed; yet much advantage may be derived from a proper uſe of any cold emollient oil or unguent. When the attending ſymptoms of pain and inflammation are moderate, the dreſſings ſhould never be removed till the cure is completed; but whenever the pain becomes ſevere, as it would probably, if neglected, terminate in ſome high degree of inflammation, by which our intention might be fruſtrated, the dreſſings ſhould be immediately taken away, ſo as to admit of the pained parts being gently rubbed or even bathed with an emollient. By this being repeated from time to time, I have ſeen different inſtances of very diſtreſsful degrees of pain being alleviated, and of the contiguous parts being ſo much relaxed, as to admit of the cure by adheſion going on

without

without interruption. In ſome caſes, however, we are under the neceſſity of employing other means; and of theſe the moſt effectual are opiates and blood-letting, particularly local blood-letting with leeches; which often proves effectual in removing pain and inflammation, when every other application has been tried in vain.

In general, a continuation of theſe means will anſwer the purpoſe: But it ſometimes happens, notwithſtanding all our endeavours, that the pain and inflammation increaſe, and the tenſion of the wounded parts becoming more conſiderable, the plaſters and ligatures with which they have been kept together muſt be taken away, otherwiſe they will do miſchief. In ſuch circumſtances the ligatures ſhould be removed at once; and for the moſt part this will give the patient immediate relief: The pain and tenſion will ſoon diſappear; and a cure muſt be accompliſhed in the ordinary way, as it

might prove hazardous to attempt the ſame method of treatment again.

I think it right, however, to remark, that, in general, the cure goes on without any interruption of this kind; and where this is the caſe, our views are completed as ſoon as a firm adheſion has taken place between the edges of the wound. I have already remarked, that this proceſs is commonly accompliſhed in a ſhorter time than is uſually imagined. In ſuperficial wounds, the ligatures, or other means of retenſion, may be removed ſooner; but even in deep extenſive wounds, if the habit of body is ſound, they may with ſafety be taken away on the fifth or ſixth day. By this time every advantage that can be derived from them will be gained; while much inconvenience, and ſome miſchief, might ariſe from their being allowed to remain longer.

I have already mentioned many of the advantages which reſult from this method of curing wounds. They are indeed ſo important, that we ſhould ſeldom heſitate

hesitate to put it in practice: For even when it fails, we know that any troublesome symptom which it may induce, will be removed by due attention to the means above mentioned; while much time will be gained when it succeeds. Two objections are commonly made to it, which we shall shortly consider. It is said, that the ligatures with which it is often necessary in wounds to secure the arteries, will act as extraneous bodies, and prevent the sides of the wound from uniting. And it is likewise observed, that in the course of the cure matter is apt to form, from the lodging of which, troublesome sinuses are produced. Neither of these objections, however, are well founded; at least, I have never met with a single instance of their being so. It seldom happens that more than one or two arteries in any wound require to be tied: But I know from experience, that wounds may be cured by drawing their edges together, even where a considerable number of arteries have been secured with ligatures: For

the threads occupy very little ſpace, and when applied with the tenaculum, which ought always to be done, they are eaſily removed without any diſturbance being given to the reſt of the wound. And again, with reſpect to ſinuſes being apt to form from this method of treatment, if the edges of a wound are only drawn together above, a cavity will thus be formed beneath, where matter will no doubt be apt to lodge; but this ſhould not be attributed to the method of cure, but to the mode of putting it in practice: For in every wound treated in this manner, the whole of the ſides or edges ſhould be drawn together from the ſurface to the bottom, by which the formation of ſinuſes is effectually prevented.

We have now to ſpeak of thoſe wounds which do not admit of this mode of treatment. When the edges of a cut cannot be drawn together, after the hemorrhagy is ſtopped and extraneous bodies removed, we find by experience, that the moſt effectual aſſiſtance we can afford, is to

promote

promote as much as poffible the formation of matter: For the fact is undoubted, that in every wound of this kind, a free fuppuration proves the moft effectual relief to every fymptom; at the fame time that it appears to be fo materially connected with the cure, that the healing procefs never begins till the fore is covered with good pus; a circumftance by no means difficult to account for. The cure of fores healed in this manner, is fo far effected by nature alone, that although fome advantage may be derived from art, yet our chief object ought to be the removal of fuch impediments as might tend to obftruct the operations of nature, and to protect the injured parts till the cicatrix becomes fufficiently firm. Now, as we know that granulations do not readily form in fores as long as they remain painful; and as nothing with which we are acquainted proves fo mild an application to wounds as pus, we may conclude, that it proves chiefly ufeful by preferving the injured parts in that eafy, pleafant ftate,

 which

which ſeems to be indiſpenſably neceſſary for the cure. It ſhould therefore be our firſt object, in the treatment of ſores of this deſcription, to forward the formation of pus as quickly as poſſible; and the moſt effectual method of doing it is, by treating every wound in the ſame manner as we do a common phlegmon; that is, by a free uſe of warm emollient poultices and fomentations.

In the firſt place, the parts ſhould be immediately covered as completely as poſſible, ſo that they may be protected effectually from the admiſſion of air. When the pain is exceſſive, poultices may be directly applied, as being the ſureſt means of relieving it. But, when the pain is moderate, it is better to delay the uſe of emollients for a day or two; for as pus cannot be produced till a ſerous effuſion has taken place, and as we know that ſome degree of inflammation is required for effecting this, when the pain and tenſion in wounds are inconſiderable, an immediate application of poultices is apt to do

harm,

harm, either by preventing altogether, or by retarding and rendering too languid that inflammatory affection which appears to be neceffary for the cure. But in every inftance of wounds of confiderable extent, remedies of this kind prove always ufeful after the firft two or three days have elapfed : For by this time a fufficient degree of inflammation has commonly taken place for effecting the wifhed-for effufion ; and we have elfewhere had various opportunities of fhowing, that in no other way can this be fo readily converted into purulent matter as by a free application of heat * ; fo that whenever this remedy is advifed, it fhould be ufed to the fame extent as in cafes of phlegmon.

It is proper, however, to remark, that this remedy fhould be ufed with caution. For although heat, whether conveyed by means of poultices or fomentations, is perhaps the moft ufeful application in the ftage of wound we are now confidering ;

* See Chap. I.

dering; yet when long continued, it is very apt to do mischief, as we have daily opportunities of observing, where it is employed by those who do not consider upon what principles it acts in the cure. When the purpose we have mentioned is gained, namely, a free and kindly suppuration, as it is for this only that poultices are used, they should then be laid aside: For when continued longer, they almost constantly do harm, by relaxing the parts to which they are applied too much; by which they are apt to become pale, soft, and spongy, instead of being of a healthy red colour, and of a firm texture. Nay, they are at last often productive of the very contrary effect for which they are employed: For although much inflammation proves hurtful in the cure of wounds, yet in some degree it is always necessary. Now, by continuing the use of warm emollients too long, this salutary degree of inflammation is so entirely carried off, that the matter becomes thin and in too great quantity. And thus

troublesome

troublesome vitiated sores are produced, which a different management would probably have prevented.

The period at which the use of poultices and other warm applications should be laid aside, must be determined in every case by the judgment of the practitioner. This general rule, however, may be safely adopted, that they may at all times be persisted in as long as much pain and inflammation continue; but these symptoms becoming moderate, the discharge being good, and the surface of the wound covered with granulations of a healthy appearance, they should now be laid aside. In this state of a sore, all the advantages are gained which poultices can produce; and when long continued, some of the inconveniencies I have mentioned are very apt to ensue.

In the ensuing chapter, I shall have occasion to enter upon a more particular detail of the best dressings for wounds. It will not,

not, therefore, be neceſſary, at preſent, to ſpeak minutely upon this part of our ſubject.

I have already had occaſion to remark, that a certain degree of inflammation is required for the cure of every ſore; but as this very rarely proves deficient, and as we have more to dread from this ſymptom proceeding too far, eſpecially in the firſt ſtages of large wounds, the mildeſt dreſſings only ſhould be employed. During the progreſs of the cure, much advantage indeed may ſometimes be derived from the application of dreſſings of an irritating, or even of an eſcharotic nature. This, however, is only the caſe when a wound has advanced to the ſtate of an ulcer. While yet recent, the mildeſt application is always the beſt. In this country, ſoft dry lint is commonly employed, while ſome practitioners adviſe pieces of ſoft ſponge; and it muſt be admitted, that they anſwer much better than any of the irritating balſams which till of late were very univerſally uſed, and which in moſt parts

parts of Europe are ftill continued: For it was in Britain that mild dreffings to wounds were firft introduced; and it is in this country only where even yet they have been generally received. But although dry lint is a mild application when compared with many others, it always creates pain and irritation on being firft applied, befides being apt to adhere to the edges of wounds, fo as to be with difficulty removed. With a view to prevent thefe inconveniencies, the lint fhould be thinly fpread with any mild ointment; fuch as Goulard's cerate, or common wax ointment. By this means it gives no pain in the application, while it is removed with eafe, at the fame time that it ferves more effectually than dry materials to prevent the air from finding accefs to the fore. As dry lint, however, has long been generally employed in this country, any innovation will not be readily admitted; but what I have advifed, being the refult of a good deal of experience,

rience, I can with confidence recommend it.

A piece of ſoft lint, ſpread with any ointment of this kind, being laid over the wound, a bolſter of fine tow ſhould be applied above it for the purpoſe of keeping the parts warm, as well as for abſorbing any matter that may be diſcharged; and this being covered with a compreſs of old ſoft linen, the whole ſhould be retained by a bandage of fine flannel or cotton, which is preferable to linen, in ſo far as it is commonly more agreeable to the feelings of the patient, and as it yields to any accidental ſwelling or tumefaction of the neighbouring parts: Whereas linen, poſſeſſing little or no elaſticity, is very apt to do miſchief, by remaining ſtiff and immoveable, notwithſtanding any ſwelling that may enſue.

Practitioners are not agreed upon the time at which the firſt dreſſings of ſores ſhould be removed; and nothing deciſive can be ſaid upon it, as in ſome meaſure it

it muſt be directed by the circumſtances of every caſe. This general rule, however, may be properly adopted, that a ſore ſhould always be dreſſed when plentifully covered with matter. This will generally be the caſe about the fourth or fifth day; but as the formation of pus depends upon different circumſtances, particularly upon the health of the patient, and on the degree of heat in which the parts are kept, ſome latitude muſt be allowed in it. A free uſe of poultices, after the ſecond day, puts it in our power to remove the dreſſings much ſooner than we otherwiſe could do: For they not only promote the formation of matter, but ſoften all the coverings that have been uſed, ſo as to admit of their being eaſily taken away.

When the cure of a wound goes on without interruption, the ſecond, as well as the ſubſequent dreſſings, ſhould be preciſely the ſame as the firſt: For our object being ſtill the ſame, no variation, it is evident, can be neceſſary. As nothing

thing proves more hurtful to ſores than expoſure to the air, one great object in the application of dreſſings, is to prevent any inconvenience which might ariſe from this. And the ſame reaſon renders it neceſſary to change the dreſſings as ſeldom as is conſiſtent with cleanlineſs; and to be as expeditious as poſſible in renewing them. In general, however, no harm will occur from the daily dreſſing of wounds. They ſhould not, but in very particular circumſtances, be dreſſed more frequently; nor can it often be proper to dreſs them ſeldomer than this: For when matter is allowed to lodge long, the heat in which patients with large wounds are uſually kept, is apt to render it putrid and offenſive. But as I ſhall elſewhere have occaſion to ſpeak fully upon this ſubject, it is not at preſent neceſſary to conſider it more particularly*: I ſhall juſt obſerve farther, with reſpect to the continuance of mild dreſſings to wounds, that

* *Vide* Chapter IV.

that it ought to be regulated by the progrefs of the cure. As long as the cure continues to advance, mild dreffings fhould be continued; but when the fore affumes any vitiated or morbid appearance, fome variety in the dreffings becomes neceffary; and the nature of any change to be thus adopted muft be regulated by the fituation of the fore at the time. We muft refer, however, for a more minute confideration of this part of our fubject to the different fections of the enfuing chapter.

I have hitherto been fuppofing that none of the fymptoms are violent; in which cafe the cure will, for the moft part, go eafily on, under the mode of management I have mentioned. But in fome cafes the healing of the fore is not only much interrupted, but much hazard is induced by the unufual height to which fome of the fymptoms proceed; and thefe particularly are, pain, inflammation, and convulfive affections of the mufcles. I fhall therefore offer a few obfervations

upon the means of obviating theſe ſymptoms, when they proceed to ſuch a height as to prove hazardous.

A wound cannot be inflicted without inducing pain: For even the ſlighteſt injury muſt neceſſarily affect ſome of the ſmaller branches of nerves; by which pain, to a certain degree, will be induced.

It commonly happens, however, that the pain which at firſt takes place in wounds is not ſo ſevere as to require any particular management: And in general, it ſubſides entirely upon the removal of any extraneous bodies which have been introduced; by protecting the injured parts with proper coverings; and by a plentiful formation of matter. But in a few caſes the pain continues ſevere after every uſual method of removing it has been attempted. Opiates in large doſes are in ſuch circumſtances more to be depended on than any other remedy; and they do not often fail of giving relief. But it frequently happens that their effect is only temporary,

temporary, the pain being apt to recur after the ſtrength of the opiate is exhauſted.

In this event we are to ſearch with much care for the cauſe of the pain. It may proceed from ſome particles of extraneous matter which have not been diſcovered; from inflammation of the wounded parts; or from ſome portion of a nerve or tendon being partially wounded without being divided; or from irritation over the whole ſurface of the ſore.

We ſhould therefore, in the firſt place, examine the wound with attention, ſo as to be as certain as poſſible that no extraneous matter has found acceſs; for when pain proceeds from any foreign body lodged in a wound, the removal of this will, for the moſt part, procure relief; while no other remedy will have any effect as long as it is allowed to remain. When not readily diſcovered, or when the particles of any extraneous matter that may be lodged in a wound are ſo ſmall that they cannot be removed with the fingers, we have already adviſed the injecting of warm wa-

ter, by which they will often be washed out when every other trial has failed. But when this does not succeed, it sometimes answers to immerse the wound for a considerable time, perhaps for an hour, morning and evening, in warm water, or in warm milk; by which particles of matter are sometimes dissolved and carried out, which would otherwise have continued to give much uneasiness.

If no trial, however, that may be made for this purpose, should prove successful, we must look for some other cause of the pain; and it will often be found to originate from inflammation. When the external parts of a wound are inflamed, this cause of pain is at once rendered obvious; for even the slightest degree of inflammation is very readily discovered. But it sometimes happens that the periosteum, and other deep-seated parts, are affected in this manner, without any external marks of it appearing. This, however, is only the case for some short period after the inflammation has commenced:

commenced: For even when it firſt attacks parts that are deeply ſeated, it commonly ſpreads in the courſe of a day or two, ſo as to be diſcovered outwardly; and when this does not happen, we may in general be directed to the cauſe, by the heat of the patient's body; by the ſtate of his pulſe; and by the degree of thirſt, which in caſes of this kind is always increaſed.

When theſe ſymptoms of fever run high, it is ſometimes neceſſary to take away conſiderable quantities of blood by one or more general blood-lettings. But for the moſt part this meaſure is not neceſſary, and our views are obtained with more certainty by local blood-letting near the edges of the wound by means of leeches. In ſuch circumſtances, indeed, no remedy proves ſo ſucceſsful as the diſcharge of blood in this manner. I have long been in the practice of uſing it in wounds accompanied with much inflammation, and very commonly with much advantage. In caſes of pain proceeding from this cauſe,

I have known the application of a few leeches to the edges of a wound procure immediate relief, even where large doses of opiates, as well as other remedies, had previously been tried in vain. And that it is not the quantity of blood, but the manner of discharging it, which proves successful, is evident from this, that the pain is often relieved immediately on a few drops being taken with leeches, which did not yield in any degree to the loss of a considerable quantity by venesection. In using leeches for this purpose, they should be applied as near as possible to the edges of the wound; nay, when they will fix within the wound itself, the practice proves still more successful: But unless the inflammation is deeply seated, this measure is seldom necessary. It sometimes happens, however, as we have observed above, that in deep wounds no inflammation of any importance appears externally, while the periosteum and other deep-seated parts are much inflamed and painful. In this situation, nothing

nothing affords fo much relief as fcarifications made in the inflamed parts, either with the fhoulder of a lancet or the point of a fcalpel. Nor need we hefitate to advife them under the dread of their being apt to produce exfoliations of the bone beneath. Inftead of this, they tend more certainly than any other remedy to prevent them; for exfoliations feldom happen from the periofteum being merely divided; of which we have daily inftances in wounds penetrating to this depth, which are rarely attended with this effect, unlefs the bone itfelf is at the fame time injured. In different cafes I have fcarified the periofteum and other parts deeply feated in wounds, and always with advantage. It removes pain and tenfion in the moft effectual manner, and thus tends more effectually than any other remedy to relieve the moft diftrefsful fymptoms which wounds ever excite.

After as much blood is difcharged as may be judged proper, whether by leeches or fcarifications, no application will

prove ſo uſeful as warm emollient poultices and fomentations frequently renewed: For in ſuch circumſtances nothing affords ſuch effectual relief as a plentiful ſuppuration being induced. We conſtantly obſerve, that as long as a wound remains dry on the ſurface, the parts are tenſe, much inflamed, and very painful; and that they become lax and eaſy as ſoon as they are properly covered with purulent matter.

For the moſt part, the means we have mentioned will be attended with the deſired effect; and eſpecially if the operator is not too timid in making the ſcarifications: For I muſt again obſerve, that this may be done with much more ſafety and freedom than is commonly imagined; and when membranes in any ſituation are much inflamed, nothing with which we are acquainted will ſo certainly prevent the acceſſion of gangrene as deep and free ſcarifications. Even this remedy, however, will not always ſucceed: For in ſome caſes the inflammation,

tion, inftead of abating, becomes more and more violent, till at laft it terminates in mortification.

When wounds are attended with violent pain, proceeding from inflammation, the caufe, as I have obferved above, is for the moft part readily perceived. But fevere pain is fometimes induced by other caufes: For although much pain feldom fails to induce an inflamed ftate of a wound at laft, it often fubfifts for a confiderable time before this takes place. In fuch cafes, and efpecially where we have no caufe to fufpect that the pain arifes from the lodgment of matter, it will often be found to proceed from the partial divifion of a nerve or tendon: For we know, that in various inftances the moft excruciating pain is induced in this manner.

In fome cafes, the pain produced by this is relieved by putting the injured parts into a ftate of relaxation; but, for the moft part, the only remedy upon which we can depend is a complete

divifion

divifion of the wounded nerve or tendon: And as this is a means of cure which may at all times be practifed without rifk, it fhould never be delayed when the pain is found to proceed from this caufe; and efpecially when, from its violence, there is reafon to fufpect that it may induce convulfions and other alarming fymptoms. As a free ufe of the fcalpel, however, is neceffary, patients in general do not eafily fubmit to this remedy; nor do we commonly find that practitioners advife it. But I can fay from many inftances of its beneficial effects, that we ought more frequently to practife it: For it feldom fails to give relief, even in fevere degrees of pain; and I never heard of its proving hurtful. It ought always, however, to be advifed as foon as any other means that may be employed have failed: For when violent pain has fubfifted fo long as to induce any material affection of the convulfive kind, even this remedy will not always remove it. On the parts being freely divided, they fhould be

be placed in a relaxed posture; and an emollient poultice being laid over them, if the practice proves successful, the patient will soon find himself relieved, and the wound may afterwards be treated in the usual way. But when the operation does not prove successful, as will be the case, when from timidity, or any other cause, it has been long delayed, there will be much cause to suspect that the patient will at last die convulsed, notwithstanding the use of opiates, and every other remedy we can employ.

In some wounds again, the pain, instead of being deeply seated, which it always is when it proceeds from an injury done to a particular nerve or tendon, is found to originate from a peculiar degree of irritability of the nerves on the surface of the sore. The pain, in such instances, is not severe; but it often proceeds to such a height as to excite much uneasiness, by which the patient is apt to be deprived of rest, and the matter discharged from the sore rendered sharp and acrid.

For

For the removal of this, emollient poultices, and other warm applications, are commonly employed; but ſeldom with any advantage. They often appear indeed to increaſe the irritability. Large doſes of opium afford the moſt certain relief; and a ſolution of opium in water, or a weak ſaturnine ſolution, are the beſt external remedies. When of a proper ſtrength, they commonly prove ſucceſsful.

While ſpeaking of the cauſe and removal of pain, it was neceſſary to mention inflammation, with the means beſt adapted for the cure. We have now to attend to the nature and treatment of ſome convulſive affections which injuries of this kind ſometimes induce.

Subſultus tendinum, and other ſpaſmodic affections, are frequent conſequences of wounds: They are more particularly apt to enſue from the amputation of limbs, when they often prove the cauſe of much uneaſineſs and pain; for the ſtarting which they are apt to produce in the

the affected limb, excites a violence of action which mufcular parts newly divided are not well fitted to fupport. And when thefe are fevere, and return frequently, they prevent the dreffings from being kept properly applied, at the fame time that they are often the caufe of hemorrhagies from arteries which have even been tied with ligatures. We ought, therefore, in every inftance, to treat this fet of fymptoms with attention. Indeed the rifk of their producing hemorrhagies is fo confiderable, and the fenfations which they excite fo diftrefsful, that a prudent practitioner will at all times judge them to be of importance.

As thefe convulfive twitchings are evidently the effect of irritation produced by the wound, it is obvious that thofe means are moft likely to prove effectual in removing them which are moft powerful in procuring eafe. Hence much advantage is derived from placing the patient's body, and efpecially the affected limb, in the eafieft pofture: Indeed more benefit

is

is derived from this than we are often aware of. I have known the severest spasms almost instantly removed, by changing the posture of a stump. But when this does not answer, opiates will seldom fail.

It is worthy of observation, in using opium for this purpose, that it answers better to give it in small doses frequently repeated, than in large doses at once. The latter often excite sickness, and even vomiting; and after their effects are over, the spasms are apt to become more severe than they were at first; which seldom happens with opiates in small doses, altho' frequently repeated.

These, however, are not the most alarming symptoms of the convulsive kind which occur from wounds. Tetanus and locked-jaw sometimes proceed from them, particularly in warm climates. Occasionally, indeed, these symptoms originate from other causes, the nature of which we cannot always discover; but when not obviously induced by deep or extensive wounds,

wounds, they may often be traced, by a more minute investigation, to some slight injury done to the surface of the body. Even the slightest scratch, not penetrating to a greater depth than the skin, has been known to induce them.

As we know that severe degrees of pain often excite involuntary contractions of such muscles as have been injured, we would naturally expect that deep and extensive wounds would be frequently attended with this effect. But we do not so readily see how the most violent affections of this kind should be most apt to occur from such wounds as are so slight as scarcely to be noticed, and which never of themselves produced much uneasiness: This, however, certainly happens.

Nor do injuries of greater importance induce these symptoms so readily while they are recent and painful: For they seldom occur in large wounds till the cure is far advanced; and in some instances, particularly after the amputation of limbs, they are never more apt to appear than when

when the cicatrix is nearly completed. At leaſt this has been the caſe in every inſtance of locked-jaw that I have met with in this country; and we are told from very certain authority, that the ſame obſervation has been made in warm climates *.

The cauſe of this may be difficult to explain; but our knowledge of the fact leads to ſome advantage in practice. We have hitherto been made to ſuppoſe, that the locked-jaw, and other convulſive ſymptoms which ſometimes ſucceed to wounds, are moſt apt to occur from the violence of pain induced at, or ſoon after the time of wounds being inflicted; and therefore practitioners have guarded with moſt aſſiduity againſt them while the pain has continued ſevere. But when it is known that theſe ſymptoms ſeldom or never occur at this period, and that they frequently appear in more advanced ſtages of wounds, thoſe means of prevention which are

* *Vide* Obſervations on the Diſeaſes incident to Seamen, by Gilbert Blane, M. D. &c.

are found to prove most effectual, will more readily act with advantage if applied at this time.

Practitioners, therefore, in warm climates, should be particularly attentive to this in the advanced stages of wounds; and the most effectual remedy we can employ on the first appearance of a locked-jaw, is immersing the patient, so as to cover the whole body, in a warm bath. The heat of the bath should be regulated by the feelings of the patient; and he should continue in it as long as he is able to bear it. Water is commonly used for this purpose; but where milk can be procured, it should be preferred: For as the warm bath proves here chiefly useful by its relaxing powers, we have reason to suppose that the oily particles contained in milk render it particularly proper; and the idea appears to be well founded by the beneficial effects which in different instances have resulted from the use of it.

It may often happen, however, that milk cannot be procured in quantities ſufficient for this purpoſe. In ſuch ſituations, fat broths, or water combined with oil in any other form, may be uſed inſtead of it. When one application of a bath proves ſucceſsful, the uſe of it need not be continued; but for the moſt part ſeveral repetitions of it are neceſſary. Nor are we to imagine that warm bathing is a certain remedy. It has frequently indeed proved highly uſeful, and many cures have been accompliſhed by it; but we muſt likewiſe confeſs that it has often failed, and that patients are daily carried off in warm climates by the locked-jaw, and other convulſive ſymptoms, notwithſtanding the moſt ample application of the warm bath, and of every other remedy that has hitherto been employed.

The failure of warm bathing has induced ſome practitioners to make trial of the cold bath; and in ſome convulſive affections it has certainly proved uſeful; particularly in caſes of univerſal tetanus:

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But as yet it has not been ſo frequently employed as to enable us to judge with preciſion, whether it will often prove uſeful or not in the locked-jaw, which we are to conſider as the moſt obſtinate as well as the moſt dangerous ſymptom of this kind.

At the ſame time that we perſiſt in the uſe of warm bathing, other remedies ought not to be neglected; and of theſe opium is the moſt certain. It proves uſeful both as an external application and as an internal medicine. By rubbing the contracted muſcles with laudanum, or keeping them covered with extract of opium, or with opium merely ſoftened with ſpirits or water, the ſpaſm has in ſome inſtances been leſſened: But the moſt effectual relief obtained from this remedy is by giving it inwardly; not in large quantities as we have remarked above, but in ſmall doſes, frequently repeated. The doſes ſhould be ſuch, however, as may effectually allay the pain and uneaſineſs produced by the diſeaſe; but more than this is unneceſſary.

When exhibited in large quantities, it seems to do mischief, by inducing that very state of the system it was meant to prevent, namely a great degree of irritability: For as soon as the operation of a large dose of opium is over, we commonly find in all spasmodic affections, that the disease returns with double violence. But this may be easily prevented, by giving such doses as the patient can easily bear, and repeating them at short intervals, in such a manner that the effects of one may not be over before another is given. Æther and musk have sometimes been conjoined with opium; but no advantage of importance has been derived from them.

We have mentioned opium as an external application; but the remedies of this kind from which we would expect most advantage are emollients, freely applied over all the contracted parts. The nature of the disease seems strongly to point them out; and experience has, in some instances, shown that they may prove useful,

ful. Emollients of every kind may be employed for this purpose; but animal fats of the softer kinds seem to be the best: For they certainly prove more powerfully relaxing in all cases of contracted muscles than the vegetable oils; at least, in the course of my experience, they have commonly proved to be so. I have elsewhere observed, that a very pure oil of this kind is obtained by boiling recent bones in water; and the fat of all kinds of fowls answers well.

Mercurials have been frequently given in locked-jaw, but when mercury has ever proved useful, it has been in such cases only where it was rubbed upon the contracted parts in the form of an ointment, and where it would probably act with advantage as an emollient.

When a locked-jaw is produced by a wound in any of the extremities, if the disease does not yield to the remedies we have mentioned, it has been proposed to amputate the member; and in various cases this hath been practised. I am sorry,

 however,

however, to obſerve, that we have ſcarcely an inſtance of the operation proving effectual: For in this diſeaſe, as in almoſt every ſpaſmodic affection, the effect is apt to remain after the cauſe is removed. We have therefore no encouragement, from paſt experience, to put this remedy in practice. Inſtead of proving uſeful, it has in ſeveral inſtances rendered the diſeaſe evidently worſe. The remedies therefore which we have to depend upon, are thoſe we have mentioned above, namely, the warm bath, opiates, and a very free application of emollients.

While we are depending on theſe for effecting a cure, the patient's ſtrength ſhould be ſupported by mild nouriſhment given by the mouth, when this can be done; and by glyſters of ſtrong broths, when the jaws are ſo firmly contracted as to prevent food from being received by the mouth: And we may, by removing a tooth or two, even in caſes of this kind, convey food to the ſtomach; ſo that wherever the ſymptoms of locked jaw are obſerved

obſerved to be approaching, one or two of the teeth ſhould be taken out, as they cannot be removed but with much more difficulty after the jaws are firmly clinched.

Having thus conſidered the various circumſtances relating to wounds in their moſt uſual form, with the means of cure adapted to each of them, we ſhall now proceed to mention more particularly ſome varieties in thoſe affections which point out a different mode of treatment; and theſe are, punctures, laceration, and contuſion.

SECTION III.

Of Punctured Wounds.

A WOUND is ſaid to be punctured when it is made with a ſmall pointed inſtrument; and when the external aperture, inſtead of being wide and extenſive in proportion to the depth, is ſmall and contracted. A wound made by a thruſt with a ſmall ſword, is of this kind.

Punctured wounds prove, in general, more hazardous than inciſed wounds of much greater extent; from deep-ſeated nerves and other parts of importance being more apt to be partially hurt; from extraneous bodies being often carried to a depth from whence they cannot be eaſily removed; from the diſcharge which they afford being more apt to lodge; and from the ſides of the punctured parts being in many inſtances with difficulty made

made to adhere. These are points of the utmost moment, not only from their being often productive of much distress to patients, but from the embarrassment which they give to practitioners, who are more apt to fail in their treatment of this variety of wound than of any other which falls within their management.

It is obvious, that much of the risk which occurs in these wounds, proceeds from their being so contracted, that free access cannot be got to their full depth: And it is equally evident that this can be obviated only by laying them open. Indeed, this is the idea which, in the treatment of punctured wounds, we should always keep in view, that of converting them, as far as with safety can be done, into incised wounds with wide extensive openings. This, however, is a question about which practitioners are not agreed: Some advise the openings of punctured wounds to be enlarged either with tents or with the scalpel; while others allege that

that this is ſeldom requiſite: And they have alſo differed with reſpect to the time at which the dilatation ſhould be made; for while ſome adviſe it to be delayed for a few days only, others do not attempt it till every other means have failed.

In the treatment of punctured wounds our views ought to be the ſame as in caſes of ſinus. Indeed, this kind of wound is exactly a ſinus in a recent ſtate; and by conſidering it as ſuch, the means of cure that will moſt likely prove ſucceſsful, are at once pointed out. In every ſinus, our intention is to procure a re-union of the parts which have been divided; but we know from experience that this cannot be effected till a certain degree of inflammation is induced upon them. For this purpoſe, the introduction of a cord or ſeton along the courſe of a ſinus has frequently proved ſucceſsful; and ſome have, with the ſame views, employed irritating injections. When by theſe means the internal ſurface of the ſinus

finus is fufficiently inflamed, the cure is to be completed, by compreffion applied in fuch a manner as to keep the parts intended to be united in clofe contact, till a fufficient degree of adhefion is produced. Now, in the application of this treatment to punctured wounds, it is obvious, that the previous fteps which we have mentioned for exciting inflammation, would at firft be feldom neceffary; for one certain effect of every wound is to induce inflammation over all the parts which have been injured: So that *a priori* we fhould be led to conclude, that compreffion alone would in all fuch cafes prove fuccefsful: For we know that it feldom fails in other cafes of finus where a due degree of inflammation is induced. But we are deterred, in punctured wounds, from the immediate ufe of this remedy; at leaft where they penetrate to any confiderable depth, from our uncertainty with refpect to extraneous bodies being lodged in them or not, and from the inflammation in this variety

of wound being apt to run too high. In ſuperficial wounds, indeed, where we are certain of being able to extract any extraneous matter, and where the inflammation is for the moſt part moderate, compreſſion may be employed immediately; and when properly applied, it will not often fail. But for the reaſons juſt mentioned, it can ſeldom be employed with ſafety in wounds of much importance.

The practice I have long adopted in punctured wounds is this: When they run in ſuch a direction as to prevent a ſeton from being carried along their whole courſe, I lay them open immediately from one extremity to the other, or as far as it can be done with ſafety, either with a probe-pointed biſtoury, or with a ſcalpel and director: And this being done, the parts are dreſſed in the manner I have adviſed above, in caſes of ſimple inciſed wounds. But when it appears that a ſeton can with propriety be uſed, emollient poultices are firſt ap-

plied

plied and continued till a free ſuppuration is induced, and till there is no cauſe to fear that the ſymptoms of inflammation are to proceed too far. A cord is then introduced nearly equal to the ſize of the opening; and being allowed to remain till there is reaſon to imagine that any extraneous matter lodged in the wound is diſcharged, it is then gradually leſſened, by taking away a thread or two every three or four days; and when reduced to a third of its original thickneſs, it is taken out entirely; when the remainder of the cure is for the moſt part eaſily effected, by the application of moderate preſſure along the courſe of the wound.

When a punctured wound is laid open at both ends, a cord may be eaſily introduced by means of a blunt probe, with an eye at the end of it. But when the inſtrument has not paſſed through the integuments on the oppoſite ſide to which it entered, a counter opening muſt be made, either by cutting with a ſcalpel on the

the round end of a blunt probe, or by passing a lancet-pointed needle, covered with a canula, along the sinus, and pushing it out at the opposite side with the seton attached to it.

In either of these ways the cure of such wounds may often be accomplished. But wherever the practice is admissible, I am clearly of opinion, that laying them open immediately after the accident is preferable to the other: For in this manner all extraneous bodies are at once brought into view; hemorrhagies are easily restrained; and the pain which sometimes occurs from a partial division of nerves and tendons is directly obviated. Nor is the inflammation, which often succeeds to punctured wounds, apt to run so high, when they are treated in this manner, as it usually does when any other method of cure is adopted: So that much distress would be prevented, and a good deal of time saved, if this method of cure was more generally practised. To those not much accustomed to this kind of

business,

business, the enlarging of a small puncture, so as to form an extensive wound, appears to be unnecessary and cruel: But whoever has seen much of this branch of practice, will know, that the greatest distress often arises from the smallest punctures; that surgeons are often baffled, and much disappointed in their treatment of them; and he will soon find, that nothing so effectually obviates this as the practice I have advised, of laying the punctures freely open as soon as possible after they are inflicted. Indeed the sooner it is done the better. No advantage can accrue from delay; and a patient always submits to the operation most readily at first, while at the same time it is productive of less pain than when the parts are swelled and inflamed, which they commonly are in the course of a few days from the time of such injuries being inflicted. In every wound therefore of this description, particularly in those received in duels with small swords, and in battles with the points of bayonets,

bayonets, the enlargement ſhould take place even before the parties are carried from the field; by which many inconveniencies which uſually attend theſe injuries would be prevented.

Some caſes, however, occur, in which this practice cannot with propriety be adopted; particularly where punctures run deep among the large muſcles, or contiguous to large blood-veſſels and nerves. As more danger would accrue from wounding theſe than could probably be compenſated by any advantage gained by dilating the wounds, it is better in ſuch circumſtances to reſt ſatisfied with laying the parts open as far as it can be done with ſafety; to truſt to the ſuppuration which will enſue for bringing off any extraneous matter that may be lodged in the wound; and to a proper application of preſſure for completing the cure. Or the practice we have mentioned above, of introducing a ſeton, may be attempted; for a cord may be paſſed with ſafety where it might be

very

very improper and unſafe to make a deep inciſion.

But it is proper to obſerve, that there are ſome caſes in which even a ſeton cannot be introduced: For a puncture ſometimes runs in ſuch a direction, as not to admit of a counter-opening. We muſt here truſt to a proper application of preſſure, not merely for preventing any lodgement of matter, but for producing adheſion of the divided parts; and when this fails, injections of a moderate degree of aſtringency may be uſed with advantage: But as remedies of this kind tend to counteract the very intention for which ſetons are employed, they ſhould never be adviſed till it appears that the latter will not ſucceed. Setons, as we have already obſerved, prove uſeful, by exciting inflammation along the courſe of a ſinus. Now, one uſual effect of aſtringent applications is, to diminiſh or even to remove inflammation. They ſhould never therefore be employed till all the ordinary means of cure have failed, when

they may be uſed with a view to check the flow of matter when in too great quantities, and to induce ſome degree of calloſity over the ſides of the ſore.

It is here proper to remark, that practitioners have differed much in opinion with repect to the uſe of aſtringent injections in wounds; for while ſome are in the daily habit of employing them, others have ſaid that they are always pernicious, and ought never to be uſed. In the early ſtages of wounds they can never be neceſſary; and as they may do harm by waſhing away the matter too freely, they ſhould never be uſed as long as a cure is expected, either by the formation of new granulations, or by adheſion: But whenever we have reaſon to conclude that this cannot properly happen, we may with propriety recommend them. Various forms of injection are mentioned by authors; but none of them are ſo harmleſs, and at the ſame time anſwer with ſuch certainty, as weak ſaturnine ſolutions. Lime-water is uſed with the ſame views; and water ſtrongly impregnated

pregnated with alum, or mixed with an equal quantity of claret or port-wine, is often employed with ſucceſs.

In the treatment of punctured wounds where ſetons cannot be employed, it is ſometimes difficult to prevent the external aperture from cloſing long before any tendency to heal appears in the bottom of the ſore; and, if not prevented, much miſchief is apt to enſue by matter collecting beneath, and burſting out from time to time. With a view to prevent this diſagreeable occurrence, tents are employed of prepared ſponge, gentian root, and other articles, that ſwell by the moiſture of the ſores, and thus ſerve very effectually to keep them open. But while they anſwer this purpoſe, they are very apt to do miſchief. When the opening of a ſore is plugged up with a tent, the matter can never be diſcharged but at the renewal of the dreſſings; by which means it will neceſſarily collect in ſuch quantities as to give riſe to abſorption, as well as to the formation of ſinuſes, by the matter ſpreading between

the layers of the contiguous mufcles. Tents, therefore, which are of folid materials, ought never to be of fuch magnitude as to fill the openings of fores. They will not readily do harm when of fuch a diameter as to admit of the matter being difcharged while they are inferted. But when employed of fuch a fize as to fill the openings entirely, they ought always to be hollow; by which the apertures into the fores will be prevented from contracting, while the matter will be difcharged as quickly as it is formed. For this purpofe practitioners fhould be provided with tubes of different forms and fizes, fo as to be able to fuit any aperture they meet with. Silver tubes are commonly employed; but thofe of lead anfwer better. Being fofter than the others, they do not create fo much uneafinefs, and they are more readily made to take any particular fhape, fo as to anfwer for finufes of a ftraight or crooked direction.

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We muſt obſerve, however, that tents and tubes of every kind ſhould be uſed with caution; and it is more particularly neceſſary that this ſhould be held forth to beginners, for there is no point in practice in which they are more apt to err. As they are early made ſenſible of the danger to be expected from matter collecting in ſores, they very univerſally fly to the aſſiſtance of tents wherever a puncture or ſinus is diſcovered. But it is right they ſhould know that tents are ſeldom neceſſary: For when once a vent is given to matter, the opening will in general be preſerved merely by the continuance of the diſcharge. In a few inſtances, indeed, it is otherwiſe; and in all ſuch caſes the leaden tubes ſhould be preferred.

We come now to ſpeak of thoſe wounds which are attended with laceration and contuſion; and as both of theſe circumſtances require nearly the ſame method of treatment, it will not be neceſſary to ſpeak of them in ſeparate ſections.

SECTION IV.

Of Lacerated and Contufed Wounds.

A Wound is faid to be lacerated, when the parts, inftead of being divided with a fharp-cutting inftrument, are forcibly torn afunder; and when, inftead of a fmooth equal furface, the edges are ragged and unequal: And we conclude, that contufion takes place when a wound has been made with a blunt or obtufe body.

Contufed and lacerated wounds are in many circumftances effentially different from fimple incifed wounds; but in nothing more than in this, that while they are commonly more hazardous, they feldom at firft exhibit fuch alarming appearances. Thus a fimple cut, which commonly

commonly heals with ease, is often attended with a much greater retraction of the divided parts, and with more profuse hemorrhagy, than a contused or lacerated wound. It is a frequent effect indeed of contusion and laceration to prevent the effusion of blood, by which inattentive observers, in forming opinions of these wounds, are very apt to be deceived: For as hemorrhagy is the most alarming symptom with which wounds are attended, when it does not occur to any alarming extent, they are apt to conclude that nothing dangerous can ensue. Practitioners of experience, however, will not be deceived by this: For it has long been known, that injuries of this kind prove always more dangerous than other wounds; and that the more violent the contusion or laceration has been, the less blood is always poured out, insomuch that there are instances even of limbs being torn off without any hemorrhagy ensuing.

The pain of lacerated and contused wounds is not always in proportion to

the extent of the injury. Thus, in leſſer contuſions, the pain is often ſevere, while it is apt to be inconſiderable where the nerves of any part have been completely deſtroyed.

The immediate effect, both of laceration and contuſion, is ſwelling or tumefaction in the retracted edges of the wound. This ſeems to be the conſequence of effuſion into the ſurrounding cellular ſubſtance. When the violence has not been ſevere, this effuſion commonly terminates in ſuppuration; the contuſed parts ſeparate from thoſe beneath in the form of ſloughs; and a cure of the remaining ſore is obtained by the means we pointed out when ſpeaking of ſimple inciſed wounds. But when the parts are ſo much injured as to have their texture much deſtroyed, and eſpecially when any of the larger arteries have been obliterated, there is always cauſe to ſuſpect that mortification may enſue. In ſound conſtitutions, and where the wound is not extenſive, even this will not often prove fatal: For in ſuch cir-

cumſtances

cumſtances the mortified parts commonly ſoon fall off, and a cure is accompliſhed in the uſual manner. But in wounds attended with contuſion or laceration to any conſiderable extent, if the habit of body is not perfectly good, the gangrene which enſues is always to be conſidered as hazardous: For the diſeaſe does not neceſſarily ſtop with the parts which have been injured; but is apt to proceed to thoſe which were not immediately hurt by the accident.

And again, even where mortification does not ſucceed immediately, when parts have been either much lacerated or contuſed, ſuch a violent degree of inflammation often occurs as terminates in mortification, notwithſtanding all our endeavours to prevent it; and in whatever way the diſeaſe is induced, this proves always dangerous; for beſides the riſk of parts immediately neceſſary for life being deſtroyed by it, the abſorption of putrid matter from a gangrenous ſurface proves often ſuddenly fatal, even when the ſize

of

of the ſore is ſo inconſiderable as to give no cauſe to ſuſpect danger.

It is therefore obvious, that in the treatment of contuſed and lacerated wounds, our principal object is to guard againſt the acceſſion of gangrene. But it is likewiſe clear, that this is not always to be done by the ſame means: For we may readily ſuppoſe, that much advantage may be derived from blood-letting, and other evacuations, where the injured parts are much inflamed, while no benefit would otherwiſe probably reſult from them. This, however, is a point of importance, and merits particular attention.

In lacerated or contuſed wounds, where the parts are much injured, it is the common practice to give large quantities of bark almoſt immediately, and to apply warm dreſſings and other antiſeptics to prevent the acceſſion of gangrene. It is evident, however, that the indiſcriminate application of this practice muſt frequently do miſchief: For however beneficial it may

may be in particular cafes, where gangrene has already taken place, it is certain that it will rather do harm where fymptoms of inflammation ftill continue violent; and unlefs mortification actually exifts, it is not clear that in any inftance it ever proves ufeful; for although we have various proofs of the efficacy of bark in putting a ftop to the progrefs of gangrene, I have never been fenfible of any advantage being derived from it, when ufed as a preventative.

Gangrene may arife in thefe wounds from two caufes: From the ftoppage of the circulation by the total deftruction of large blood-veffels; and from violent inflammation.

Gangrene proceeding from inflammation is here moft to be dreaded; for that which arifes from the deftruction of blood-veffels is by no means frequent. The inflammation therefore which takes place in lacerated wounds, demands always our clofeft attention.

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As the hemorrhagy, ſubſequent to contuſion or laceration, is ſeldom alarming, and as blood diſcharged from the injured veſſels, tends more effectually than any other remedy to prevent inflammation; ſuch quantities ſhould be taken away in this manner as the nature of the wound may indicate, and the ſtrength of the patient may admit. After this, if the divided arteries continue to throw out blood, they muſt be ſecured with ligatures; for till the diſcharge of blood is ſtopped, the patient will not conſider himſelf as ſafe; nor can the wound be examined with accuracy. The parts are now to be cleared of all extraneous bodies, as far as this can be done with propriety, and are to be placed as much as poſſible in their natural ſituation; but no kind of ſuture ſhould be employed for their retention. If the violence done to them is conſiderable, and eſpecially if accompanied with much pain, it will be ſtill neceſſary to take blood in proportion to the ſtrength of the patient; and the beſt method

thod of doing it is by means of leeches, applied as near as possible to the edges of the sore. Indeed no remedy I have employed proves so certainly useful in lacerated or contused wounds as the discharge of blood in this manner; for it not only tends to prevent the inflammatory symptoms from running high, but very commonly renders the pain moderate, even when it has previously been severe. It ought never therefore to be omitted; but the practitioner should take care that it be proportioned to the violence or urgency of the symptoms: For the discharge of a small quantity of blood will in some cases of contusion or laceration prove fully sufficient; while in others, it is necessary to repeat the operation once and again.

As soon as a sufficient quantity of blood is discharged, the parts affected, after being dressed with pledgits of any emollient ointment, should be completely covered with a warm emollient poultice; and this, together with warm fomentations, should be renewed three or four times a-day, so

as

as to promote, with as much certainty as poſſible, the formation of pus. To induce ſuppuration in lacerated wounds, is indeed an object of the firſt importance: It generally relieves all the ſymptoms; and till ſuch time as it takes place, we have often reaſon to dread the event.

We commonly find, when ſores of this deſcription become covered with good pus, that the pain and tenſion abate; and ſuch of the parts as have been much lacerated and contuſed, and which hitherto have been ſloughy or perhaps black with mortification, begin now to ſeparate from thoſe beneath: And this being accompliſhed, they may in general be cured in the ſame manner with wounds of any other kind. Nay, when brought to this healing ſtate, we may often attempt with ſafety to forward the cure by drawing the edges of the retracted ſkin into contact, either by means of the uniting bandage, or with adheſive plaſters; for although this would be improper in the commencement of ſuch wounds, while there is any riſk of the tenſion

ſion and inflammation proceeding too far, it may with much propriety be adviſed when there is no longer reaſon to be afraid of theſe ſymptoms.

When practitioners are immediately called, and have employed the means we have mentioned in due time, they will very commonly prove ſucceſsful: But it frequently happens, whether from the violence of the injury, the tendency in ſome conſtitutions not only to inflammation but to gangrene, or from the proper remedies not being timeouſly applied, that all the ſymptoms become daily worſe, and, notwithſtanding repeated blood-lettings both general and local, all thoſe parts which were at firſt inflamed become black and mortify. In this ſituation we do not truſt to evacuations: On the contrary, whatever tends to debilitate ſhould be avoided; and we know from experience, that in ſuch circumſtances, no remedies prove ſo uſeful as thoſe which invigorate and reſtore the tone of the ſyſtem.

With

With this view, the patient ſhould be deſired to live upon nouriſhing food. He ſhould be allowed as large a quantity as he can take, of good wine, or ſtrong malt-liquor; and Peruvian bark ſhould be given in as large doſes, and theſe as frequently repeated, as his ſtomach will permit. Indeed bark is perhaps the only remedy on which we can place dependence; and as we know from experience that it may with ſafety be given in great quantities, it ſhould always be exhibited without farther limitation than neceſſarily ariſes from the ſtate of the ſtomach. We may remark, too, that it proves in general uſeful nearly in proportion to the quantity employed; and it often happens, that large doſes are not more nauſeated than thoſe of not more than half the quantity. Where it is of importance to throw in a large quantity of bark in a ſhort ſpace of time, as is always the caſe in gangrene, it ſhould never be given in leſs than doſes of a dram, or even two drams, when the patient can bear it; and theſe ſhould be repeated every

ry-hour. Bark, in some cases, seems to prove more powerful when conjoined with the vitriolic acid: Elixir of vitriol may therefore be given along with it. In gangrene arising from debility, opium frequently proves useful; and as it does not counteract the bark, the two remedies may with safety be prescribed together.

In the mean time, the state of the sore requires particular attention. As long as any tendency prevails in the contiguous parts to inflammation, the best applications, perhaps, are warm emollient poultices and fomentations; for, as we have elsewhere shown, that the separation of mortified parts is commonly effected by the formation of matter between them and the adjoining sound parts, we necessarily derive most advantage from whatever tends to promote it *. But as no suppuration will occur without some degree of inflammation, when there is no reason to imagine that this will otherwise happen,

* *Vide* Chap. I. where this subject is more fully considered.

we ſhould endeavour to excite it by adviſing warm dreſſings to the ſore, and eſpecially by the application of ſtimulants to the contiguous parts. Muſtard applied in the form of a poultice, as well as other rubefacients, have proved uſeful in this manner; and I have employed with advantage a ſtrong ſolution of crude ſal-ammoniac in vinegar and water. It is proper, however, to obſerve, that this practice muſt be managed with caution: For a high degree of inflammation might often prove detrimental, while in every inſtance it would be unneceſſary; and we know from experience, that a ſmall degree of it is ſufficient. As ſoon, therefore, as it is obſerved that the mortified parts are ſurrounded with a kind of inflamed ring, the ſtimulating applications ſhould be removed, in order to give place to warm emollients, for the purpoſes I have mentioned. Any parts that are completely mortified may with ſafety be removed; indeed the offenſive ſmell which they produce renders

this

this a neceſſary meaſure: But as I have elſewhere obſerved, the common practice of making inciſions through the diſeaſed parts into thoſe beneath which are ſtill ſound, ſhould never be adopted. No advantage can be derived from it, and it may be productive of much harm. It is recommended with the view of giving more free acceſs to ointments, and other remedies uſed as dreſſings, than could otherwiſe be obtained; but I have not in any inſtance ſeen it prove uſeful, and in different caſes I have been ſenſible of its doing miſchief. It may very readily carry the putrid matter of gangrene more deeply into the contiguous ſound parts than it would otherwiſe penetrate. In ſome caſes it has evidently induced more inflammation than was neceſſary; and in more inſtances than one I have known ſcarifications prove hurtful, by exciting very troubleſome hemorrhagies.

By perſiſting in the uſe of bark, and the other remedies juſt mentioned, and eſpecially if the ſtrength of the patient is ſup-

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ported with wine and nouriſhing food, even bad caſes of gangrene will often terminate happily; the mortified parts will ſeparate, and the remaining ſore will heal kindly and eaſily with common mild dreſſings: But in other inſtances, notwithſtanding all our endeavours, the diſeaſe will continue to ſpread, and nothing will prevent its fatal termination. When gangrene is ſeated in any of the extremities, it is the common practice, when other means of cure fail, and when mortification is ſtill advancing, to amputate above the diſeaſed parts: We have elſewhere ſhown, however, that this practice ſhould not be adopted; and when treating of amputation, we ſhall again have occaſion to conſider the ſubject more particularly.

In the treatment of mortification, it is a good general rule to adviſe evacuations of every kind with much caution. This is particularly the caſe with reſpect to blood-letting; but in addition to what I have already obſerved, I think it right to remark, that in all caſes of inflammation

where

where the approach of gangrene is dreaded, and particularly in wounds attended with much contusion or laceration, till mortification actually occurs, we should proceed with freedom in an antiphlogistic course, particularly in discharging as much blood as the degree of inflammation may appear to render necessary; and I insist on this point the more fully, from having often observed much mischief ensue from practitioners being too timid in advising it. Being afraid of sinking the patient too much, they avoid the only remedy that could probably save him: For, in such circumstances, it is the violence of the inflammation of which we have most reason to be afraid; and as we know of no remedy which can with such certainty be depended upon for removing inflammation as blood-letting, it should be prescribed with as much freedom as the strength of the patient and other circumstances of the case will permit; by which the accession of gangrene will often be

prevented when all the ufual remedies would probably fail.

What we have hitherto faid in this and the preceding fections, may be confidered as common to wounds in general: We now proceed to confider thofe wounds, which, either from the nature of the part wounded, or from its fituation, demand a peculiar treatment.

SECT.

SECTION V.

Of Wounds in the Veins.

IT is for the moſt part difficult to reſtrain hemorrhagies from wounded arteries, on account of the force with which the blood is propelled into them by the heart, and on account of their muſcular coats, which prevent them from collapſing readily. But in the veins neither of theſe circumſtances take place; the contractile power with which they are endowed is very inconſiderable; and we do not perceive that the circulation in them is much affected by the action of the heart.

For theſe reaſons, wounds in the veins heal with more eaſe and are attended with leſs danger than wounds of the arteries: Indeed we know, that the largeſt veins are often much injured, and that no bad ſymptom will enſue; while very trouble-

ſome conſequences will follow from wounds even of ſmall arteries. In general, therefore, we have no great reaſon to be afraid of wounds in the veins: For while we have it in our power to check the hemorrhagy, we never obſerve any detriment to enſue even from the obliteration of the largeſt external veins; for the anaſtomiſing branches ſo readily admit of dilatation, that they ſoon become ſufficient for carrying on the circulation beyond the parts affected.

We commonly find, that a longitudinal cut in a vein heals with eaſe when only ſlightly covered with a piece of dry lint or ſoft old linen: When this fails, the hemorrhagy may be always ſtopped by the application of a piece of dry ſponge or agaric to the bleeding orifice, and ſecuring it with moderate preſſure. But in tranſverſe cuts in the large veins, or when any of them are cut entirely acroſs, it may ſometimes happen either that preſſure cannot be properly applied to the wound, or that it does not prove ſuffi-

cient for ſtopping the diſcharge: In ſuch caſes eſcharotics are commonly adviſed, and by ſome practitioners the actual cautery is employed; but none of theſe can be depended on; and they are apt to create a good deal of uneaſineſs. The ſame remedy therefore ſhould be employed here that we daily uſe in hemorrhagy from wounds in the arteries, namely, ligatures; which, when properly applied, neither fail in their effects, nor produce any material inconveniency. In the application of ligatures, we have elſewhere ſhown, that the crooked needle ſhould ſeldom or never be uſed, and that the tenaculum alone ſhould be employed.

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SECTION VI.

Of Wounds in the Lymphatics.

THE lymphatics are equally liable to injuries with other parts of the body: As they often lie contiguous to veins, they are ſometimes wounded in the operation of blood-letting; and not unfrequently they are cut in opening buboes and other glandular collections of matter.

When the ſmaller branches only of lymphatics are opened, we may readily ſuppoſe that they will heal along with the reſt of the wound; but a wounded lymphatic is ſometimes ſo large, that it does not heal ſo ſoon as the other parts, but continues to pour out its contents in conſiderable quantity, thus giving a good deal of inconveniency, while at the ſame time it weakens the patient: We ſhould never

never heſitate therefore in putting a ſtop to the diſcharge.

Various means have been propoſed for effecting this. In ſome caſes it has been done by compreſſion alone: Aſtringents have been adviſed, together with the application of dry ſponge, agaric, and common puff-ball; and both the actual and potential cauteries have been uſed. But when moderate preſſure fails, our moſt effectual remedy is to take up the injured lymphatic with a ligature, in the ſame manner as we do wounded arteries. No objection can be made to this; and it anſwers the purpoſe in the moſt certain manner.

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SECTION VII.

Of Wounds in the Nerves and Tendons, and Ruptures of the Tendons.

IN a preceding part of this chapter I had occaſion to ſpeak of the conſequences which ſometimes reſult from the partial diviſion of nerves and tendons, and of the means which ſeem to be beſt adapted for removing them. When treating of blood letting, I ſhall again find it neceſſary to enter upon the ſame ſubject, ſo that our obſervations to be made upon it at preſent will not be numerous.

It muſt often happen, that nerves and tendons are partially divided along with other parts; but when no pain enſues from it, this accident does not particularly come under the obſervation of practitioners. In ſuch caſes they heal along with the other parts of the wound: But in

in various inſtances, either from ſome ſingular degree of irritability in the injured parts, or from a peculiarity of conſtitution which we cannot explain, the ſlighteſt puncture of a nerve or of a tendon, will induce very ſevere pain, inflammation, convulſions, and even death.

Whenever we have reaſon to ſuſpect, from the violence of the pain, that the other ſymptoms may ſupervene, the moſt effectual means ſhould be immediately uſed for preventing them: For when once convulſions take place, we are never certain of being able to allay them. In ſome caſes, large doſes of opiates anſwer the purpoſe: But when they do not very quickly prove ſucceſsful, no time ſhould be loſt in putting the only remedy in practice, on which we can place much dependence; and that is, the complete diviſion of the injured nerve or tendon. By this we may indeed induce a certain degree of inſenſibility in the parts beneath, or they may even be deprived of the power of voluntary motion: But any inconvenience

inconvenience which this may occaſion will be trifling, when compared with the advantages which reſult from the operation: For I can from experience aſſert, that it ſeldom fails in removing all the ſymptoms, when timeouſly employed; while in various inſtances, wounds of this kind have terminated in death where it has been omitted.

In this manner we may obviate the effect of punctures and partial wounds, either in nerves or tendons: But it is neceſſary to mention the method of treatment to be purſued in the healing of wounds or ruptures of large tendons, when completely divided. As a complete diviſion of any of the large tendons is always attended with much retraction, it was long ago inculcated by practitioners, to draw the retracted extremities of the ruptured tendon into contact, and to retain them in this ſituation by ſutures: And this being done, and the limb placed in a favourable ſituation, the reſt of the ſore was treated in the uſual way.

There

There is no reaſon to doubt of cures having been often accompliſhed in this manner: Nay, where tendons have been merely ruptured, without any external wound, as often happens with the tendo Achillis, the retracted ends of the tendon have been laid bare by an inciſion, for the very purpoſe of retaining them by ſutures. This, however, is a very painful operation; and as the ſame intention may be accompliſhed in a more ſimple manner, it ought to be laid aſide. When it was firſt propoſed to unite ruptured or wounded tendons by means of ſutures, it was the common opinion, that, in order to inſure a reunion of the divided parts, it was abſolutely neceſſary to bring them into cloſe contact; and the ſame idea prevailed, not merely with reſpect to tendons, but with regard to bones, as well as other parts.

In the treatment of fractured bones and ruptured tendons, it is no doubt a right general rule to endeavour to bring the divided parts as nearly into contact

as possible: But we now know that cures may be accomplished where the retraction of parts is so considerable as to render it impossible to draw them together; nay, that it has often been done, even where a portion of a tendon or of a bone has been completely removed. Very considerable portions of bone have been regenerated; and although we are not certain that any part of a tendon has ever been renewed, yet such adhesions always take place between the retracted ends of the divided tendon and contiguous parts, as tend in a great measure to supply the deficiency. Thus I have known different instances of the tendon of the rotula being ruptured, as well as of the tendo Achillis: And although the ends of the retracted tendons could never be brought within an inch of each other; yet in all of them where proper attention was given, the cures have been so far complete, that the use of the limbs has been very perfectly restored. Some degree of stiffness has often indeed remained for a considerable time;

time; but at last even this symptom has very commonly been removed.

Wherever a wounded tendon is situated, or even when a tendon is only ruptured, and no injury done to the external parts, the limb should be placed in such a manner as will most readily admit of the retracted ends of the tendon being brought nearly together; and when in this situation, the muscles of the whole limb in which the injury has happened, must be tied down with a roller in such a way as to prevent them from being exerted in any way during the cure, at the same time that the parts should be placed in such a position as will tend most effectually to keep them easy and relaxed. Thus, in a wound or rupture of the tendon of the rectus muscle of the thigh, the patient's leg should be kept as much as possible stretched out during the cure, and the thigh should be in some degree bent, or elevated into an angle with the body, so as to relax the muscle itself as far as it can be done, while

in ſimilar affections of the tendo Achillis, the knee ſhould be kept bent, ſo as to relax the muſcles of the leg; at the ſame time that the foot ſhould be ſtretched out, ſo as to admit of the ends of the ruptured tendon being brought nearly into contact. In applying a roller to ſecure the muſcles and tendons in this ſituation, it ſhould be done with a firmneſs ſufficient for the purpoſe, at the ſame time that care ſhould be taken to prevent it from impeding the circulation: With this view, fine ſoft flannel ſhould be preferred to linen or cotton: For being more elaſtic, it more readily yields to any ſwelling with which the limb may be attacked.

The late Dr Monro was the firſt who gave accurate directions for treating a rupture of the large tendons; and he has probably done it with the more preciſion, from having himſelf experienced the effects of this misfortune in the tendo Achillis. As the method which he points out, and the inſtruments which he recommends,

mends, are ſimple and judicious, and as they have in various inſtances been found to anſwer the purpoſe, a deſcription of them will be conſidered as a proper addition to this article.

The different inſtruments uſed by Dr Monro, with the ſeveral parts of each of them, are repreſented in Plate II.

Fig. 9. Is a foot-ſock or ſlipper, A, of double quilted ticken; from the heel of which, B, the quilted ſtrap, D, is of ſuch a length as to reach above the calf of the leg.

Fig. 1. A ſtrong quilted calf-piece, E, with pye-holes, FF, on each ſide, through which a lace, fig. 2. is to be paſſed, and with a buckle, G, ſo placed on its back-part, that when the lacing is on the outſide of the leg, the buckle will be in the middle of the lower part. Two rows of pye-holes are here repreſented, one on each ſide; either of which may be uſed according to the ſize of the leg.

In Dr Monro's caſe, the foot and leg were firſt wrapped in ſoft flannel ſmoaked

with fumes of benzoin, when he put on, as in fig. 3. the foot-ſock A, and calf-piece E; and bringing the ſtrap H thro' the buckle G, he could by it extend the foot, and pull down the calf to what degree might be judged proper, and there it was ſecured with the buckle.

This bandage anſwered the intention perfectly well; and it was worn night and day. It ſhould be drawn tighter during ſleep, and relaxed when the patient is awake, and on his guard; during which the foot ſhould be placed upon a ſtool, as at I; and the calf-piece ſhould be frequently ſtuffed, or made eaſier by looſening the lace ſo as to prevent the foot from ſwelling, which is apt to happen, if this is omitted. To prevent the toes from becoming uneaſy, the foot-ſock ſhould be left open at the end K.

During the firſt fortnight the Doctor made no motion or effort with his foot, but was carried in a chair, running on caſtors, from one part of his houſe to another: After this he began to move the foot

foot backwards and forwards, ſo gently as not to give pain. In a gradual manner the motions were increaſed; the extenſion of the leg and flexion of the foot were always ſtopped on their producing any uneaſineſs.

On beginning to walk, the affected leg, which was the left, was always put before the right, ſo that the left foot might be as well extended as poſſible. To prevent any danger from falling, a cane was uſed in the right hand.

The void between the two ends of the divided tendon became inſenſible in a few days, except that a ſoftneſs was felt there more than any where elſe; but this part turned gradually thicker and harder, till a knot was formed in it of the ſize of a middle-ſized plum. At firſt this tumor was equally hard with a piece of cartilage; but it gradually became ſofter, and diminiſhed ſo much, that at laſt it was ſcarcely perceptible.

With a view to ſtrengthen the leg and foot, cold water was poured upon them,

and immediately thereafter they were well rubbed. This was firſt employed ſome weeks after the accident: But no advantage being derived from it, the parts were afterwards ſtrongly rubbed twice a-day with unguentum altheæ, or ſome other emollient; and this was continued till the limb could be uſed with freedom.

In about two weeks from the time of receiving the injury, the Doctor was obliged to go abroad, when he uſed a pair of ſhoes with heels two inches high, and applied the machine, which we ſhall preſently deſcribe, through the day, inſtead of the former bandage; which, however, was always put on at night for a month longer.

This machine, fig. 8. is a piece of ſteel, the middle ſtalk of which, L, is narrow but ſtrong; the ends, MM, are thin and concave, and muſt be adapted to the convexity of the foot and fore-part of the leg. Three ſtaples, *a, a, a,* ſtand

ſtand up from the fore-part of the ſteel; one in the middle of each of the broad ends, and the third in the middle of the ſtalk. All the ſteel, except the ſtalk, ſhould be coverėd with ſoft leather, and the concavities of M M ſhould be well buffed, as the ſofter rupture-bandages commonly are.

After putting on the ſhoes and ſtockings, one end of this machine was put upon the broad part of the foot, nearer the toes than the buckle of the ſhoe, and the other end placed upon the fore part of the leg; then one ribband, or a thong of leather, fig. 5. was put round the foot, and another, fig. 6. round the leg, to paſs through the two ſtaples near the ends of the machine, and there ſecured with ſtraps or buckles, but without being drawn tight. A third ſtrap or ribband, fig. 7, with its middle, N, applied to the hollow of the foot immediately before the heel, had its ends paſſed on each ſide of the foot through a

noose, *o o*, of a fourth thong of leather, P, that came round the quarter-heel of the shoe, to be afterwards put through the middle staple; where, after these ends, *q q*, were drawn as tight as was thought convenient for extending the foot, they were secured with the buckle or with knots. See the application of this machine in figure 4.

This was continued for the space of five months; but those who may find it inconvenient, might use instead of it a thong of leather, sewed at one end to the upper and middle part of the quarter-heel of the shoe, and fastened at the other end to a garter or strap put above the calf of the leg. The high-heeled shoes were continued for a considerable time: Two years elapsed before they were thrown aside; by which means, and by treating the injured limb during all that period with great caution, a very complete cure was obtained; while others, who have not been so attentive to the

the management of matters of this kind, have not been ſo fortunate; ſome of them having the tendon ruptured a ſecond, or even a third time, and others remaining ſtiff and lame for a great length of time.

SECT.

SECTION VIII.

Of Wounds in the Ligaments.

BY Ligaments, we underſtand thoſe flexible bodies which ſerve to cover the different articulations, and by which many of the bones are firmly tied to each other. The bones of the pelvis are united by ſtrong ligaments; and we know, that ſeveral other bones are chiefly connected by the ſame means. But as all theſe ligaments lie deep, they are not much expoſed to the effects of external violence; and the ſame cauſe puts it out of our power to apply any particular treatment for injuries which may accidentally be done to them. Our obſervations at preſent are therefore chiefly applicable to wounds of the ligaments of joints,

joints, commonly termed Capſular Ligaments.

As ligaments are not ſo plentifully ſupplied with nerves as ſome other parts of the body, ſeveral anatomiſts have been induced to believe that they are not poſſeſſed of ſenſibility; by which we might be led to conclude, that injuries done to them would not probably require much attention: But although Nature, for obvious reaſons, has not made the ligaments highly ſenſible; and although in a healthy ſtate they will bear much fatigue, without ſuffering ſo much as other parts of the body; yet the fact is undoubted, that they are rendered extremely ſenſible by diſeaſe; and that wounds inflicted on them are frequently productive of very alarming conſequences. We have often indeed known the ligaments of joints much injured, nay violently lacerated, with the heads of the bones which they ſurround being puſhed through them, as well as by other cauſes, without any important conſequences taking

king place; nay, in ſome caſes, the wounds have healed as eaſily as if the ligaments had not been affected. Occurrences of this kind, however, are rare; for in a great proportion of caſes, the ſymptoms which enſue from wounds of the joints are ſevere and hazardous.

The effects produced by this kind of injury are often deceitful: In general nothing alarming appears at firſt, nor for ſeveral days after the accident; and when the patient is treated with care and attention, I have known a week paſs over before any other ſymptom has been obſerved than uſually takes place in the moſt ſimple wounds. But, at length, the patient begins to feel an uneaſy ſenſation of ſtiffneſs over the affected joint, which by degrees turns more ſevere; when the parts become ſwelled, tenſe, and ſomewhat inflamed. In this ſituation the pain is often ſo ſevere, that the patient cannot allow the joint to be touched: He complains of a tightneſs round the whole, as if it was firmly tied or girded; and the inflammation,

inflammation, which at firſt was confined to the joint itſelf, is now apt to ſpread over the whole limb.

If the wound or laceration in the capſular ligament is large, the ſynovia is often diſcharged in conſiderable quantities at firſt; but the ſwelling induced by the inflammation gradually puts a ſtop to this, till at laſt the wound becomes dry and ſloughy. In the courſe of a few days, however, extenſive ſuppurations begin to form over the joint; and on theſe being laid open, large quantities of pus are diſcharged, together with ſynovia. By this the tenſion and ſenſation of girding are immediately removed, and the patient obtains relief; but ſucceſſive ſuppurations commonly take place, which from time to time excite a renewal of all the ſymptoms, and by which the patient's health is at laſt greatly injured.

When wounds of ligaments do not heal quickly, and almoſt without the formation of matter, this is in general the manner in which they terminate; at leaſt it

is

is the caſe in the larger joints, and it is in theſe chiefly that they commonly prove alarming.

From this hiſtory of the riſe and progreſs of the ſymptoms, ſome advantage may be derived in conducting the cure. From this it is evident, that it is not merely the injury done to the ligament which we have to dread, but a ſecondary train of ſymptoms, which are apt to reſult from it. Although none of the lining membranes of cavities, which are naturally ſhut up from the air, ſeem to be endowed with much ſenſibility, it ſeems to be a common effect of air being admitted to give them a high degree of it. Of this we have frequent proofs in wounds penetrating the thorax and abdomen; and it is chiefly to this cauſe that we are to attribute thoſe conſequences which reſult from wounds in the capſular ligaments of joints.

This points out a very important circumſtance in the treatment of theſe wounds, namely, the prevention, as far as is in our power, of air finding acceſs

to the cavities of capſular ligaments. In large lacerated wounds, this will, for the moſt part, be impracticable; but in common inciſed wounds, it may often be very completely effected.

It ought never to be attempted, till we are certain that all extraneous bodies that have been carried in are extracted. This being accompliſhed, we may very commonly cover the wound in the capſular ligament entirely, by pulling the ſkin ſo far over it, that the wound in the one may not correſpond with that in the other; and as the ſkin about the joints is ſufficiently lax to admit of this, it may for the moſt part be eaſily done. We are now to fix the ſkin in ſuch a manner that it may not retract, either with ſutures or adheſive plaſters: But in general the latter will prove ſufficient, if aſſiſted by the application of a proper bandage; and they are preferable to ſutures, which in this ſituation are apt to excite inflammation. After the plaſters are applied, the ſkin and cellular ſubſtance ſhould

be

be supported in their ſituation by paſſing a flannel roller ſpirally round the joint, ſo as to produce an equal degree of compreſſion over it, of a tightneſs ſufficient for gently compreſſing the parts to which it is applied without interrupting the circulation. The patient ſhould be in bed while the dreſſings are applied, ſo that they may not afterwards be liable to be moved; and the limb ſhould be put upon a pillow, and placed in ſuch a ſituation as admits of the ſkin and other teguments being completely relaxed, which will be found to be different in different parts even of the ſame joint. Thus, in wounds on the anterior part of the knee, the leg ſhould be kept extended during the whole progreſs of the cure; for in this ſituation the ſkin which covers the fore part of the joint is moſt effectually relaxed; while, for a ſimilar reaſon, in penetrating wounds entering from the ham, the leg ſhould be kept bent.

In the mean time, in order to prevent the acceſſion of inflammation, the patient ſhould be put upon a low diet; his bowels ſhould be kept open; a moderate perſpiration ſhould be excited; and he ſhould loſe a quantity of blood ſuited to his age and ſtrength.

By wounds of the joints being treated with this ſtrict attention, I have known many of them terminate eaſily, which otherwiſe, there was cauſe to think, would have produced both diſtreſs and danger. But when theſe means do not prove effectual, or when too long neglected, ſo as that the application of them is no longer admiſſible, and which is the caſe when inflammation has taken place, other remedies muſt of courſe be employed.

In this ſituation, our chief object is to leſſen or remove the inflammation; for if not ſpeedily accompliſhed, it will in all probability ſpread over the whole joint, and terminate in an extenſive formation of matter; and this being always hazardous, nothing ſhould be omitted by

which it can probably be prevented. The moſt effectual remedy which I have ever employed for this is local blood-letting; but, in order to prove uſeful, it muſt be carried to a conſiderable length. In ſtrong robuſt patients, eighteen or twenty leeches ſhould be applied as near to the part affected as they will bite, and repeated daily as long as the continuance of the inflammation may render it neceſſary. Any of the ſimple ointments may be applied to the wound itſelf; but one of the beſt applications to the joint is the ſteams of warm vinegar, which prove often uſeful in preventing the formation of matter. And as the pain in wounds of the joints is in general ſevere, large doſes of opiates muſt be given to allay it. In a few caſes, I have known the pain much relieved by the external application of a ſtrong decoction of white popy heads, in the form of fomentation: But for the moſt part nothing proves effectual but the internal uſe of opium.

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A due attention to theſe means will commonly prove effectual, if they have not been either too long neglected or too ſparingly adminiſtered. From either of theſe cauſes, however; from the injury having been particularly ſevere; or from ſome conſtitutional affection; the inflammation will in ſome caſes ſtill proceed to increaſe; and, notwithſtanding all our endeavours, will at laſt terminate in very large collections of matter, which will be partly within the capſular ligament of the joint, partly in the ſubſtance of the ligament itſelf, and in part will be found to have ſpread through the cellular ſubſtance of the contiguous parts. In ſuch circumſtances, all that we can do is to give free vent to any matter that may form; which can only be done by making an opening in the moſt depending part of the collection as ſoon as the exiſtence of pus is aſcertained. In this manner, and by a proper uſe of emollient poultices and fomentations, whenever a new collection appears to be forming, we

will

will often be able to ſave limbs, which o-therwiſe it would be neceſſary to amputate: But all who have had experience in this branch of practice will know, that when wounds in any of the larger joints terminate in ſuppuration within the capſular ligaments, that the riſk attending them is great; and that we can never, even under the beſt management, have any dependence on their terminating favourably. The principal reaſon, as I have already obſerved, of their continuing obſtinate, is the inflammation becoming violent; which when not obviated by the means adviſed above, is apt to produce ſuch large collections of matter; and one abſceſs is ſo apt to ſucceed to another, that the patient is at laſt exhauſted, when we are often under the neceſſity of removing the limb in order to ſave his life. In ſuch circumſtances, indeed, there is no room to heſitate; for when the ſtrength is much impaired by the frequent formation of abſceſſes, if the ſame diſpoſition continues, and eſpe-

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cially if any degree of hectic fever has taken place, the risk attending any attempt to save the limb will now be considerable, while the chance of succeeding will be so small, that it should never be advised.

But although I am decidedly of opinion, in circumstances such as we are considering, that it is the safest course to amputate the limb; yet I by no means agree with those who say, that almost every case of a wounded joint requires the same remedy. By many it has been asserted that wounds in any of the larger joints almost universally terminate so unfavourably, that, in order to save much pain and trouble, as well as risk to the patient, it would be the most advisable practice to amputate immediately after the accident, before there could be any chance of inflammation taking place. I am convinced, however, that this opinion is founded in error; and my reasons for it are these:

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Although a complete cure is not often obtained where the capſular ligaments of large joints are extenſively wounded, yet in ſome caſes it is otherwiſe. Of this I have met with various inſtances: And although ſuch injuries will not often be ſo effectually cured as to prevent a good deal of ſtiffneſs and immobility in the joints in which they are ſeated; yet even a complete anchyloſis is an inconvenience to which a patient ſhould in moſt caſes ſubmit, rather than to the pain and hazard which uniformly attend the amputation of any of the extremities.

As it muſt be admitted, however, that the proportion of limbs ſaved by this practice is not great, when the injury done to the capſular ligaments of joints is extenſive, this argument would not deſerve our attention, if the delay which it occaſions were to be attended with any additional hazard, or if it ſhould preclude amputation, if at any future period of the ſore it might be judged adviſable. This indeed has been alleged by practitioners: But there

there is much cause to suspect that they are wrong; for many who have been accustomed to amputate in the late stages of these wounds, have had more success than usually attends the practice immediately after the injury is inflicted. And this, in the course of my experience, has been so uniformly the case, that scarcely any have died who were not previously so very much reduced, as to render their chance of recovering very small indeed; a situation which we have it always in our power to guard against, by advising the operation before matters are so far advanced.

Where the capsular ligament of a joint has not only been wounded, but much lacerated and contused, it may, in a few cases, be proper to advise immediate amputation. But such instances are extremely rare; in so much, that I have scarcely met with any, excepting where the ends of bones have been perhaps much shattered, and even splintered at the same time. Where this has not been the

case,

caſe, I have uniformly attempted to ſa the limb; and as in many inſtances th practice has ſucceeded, and without adding to the riſk of the patient where the trials have failed, I ſhall certainly think it right to continue it.

END OF VOLUME FIRST.